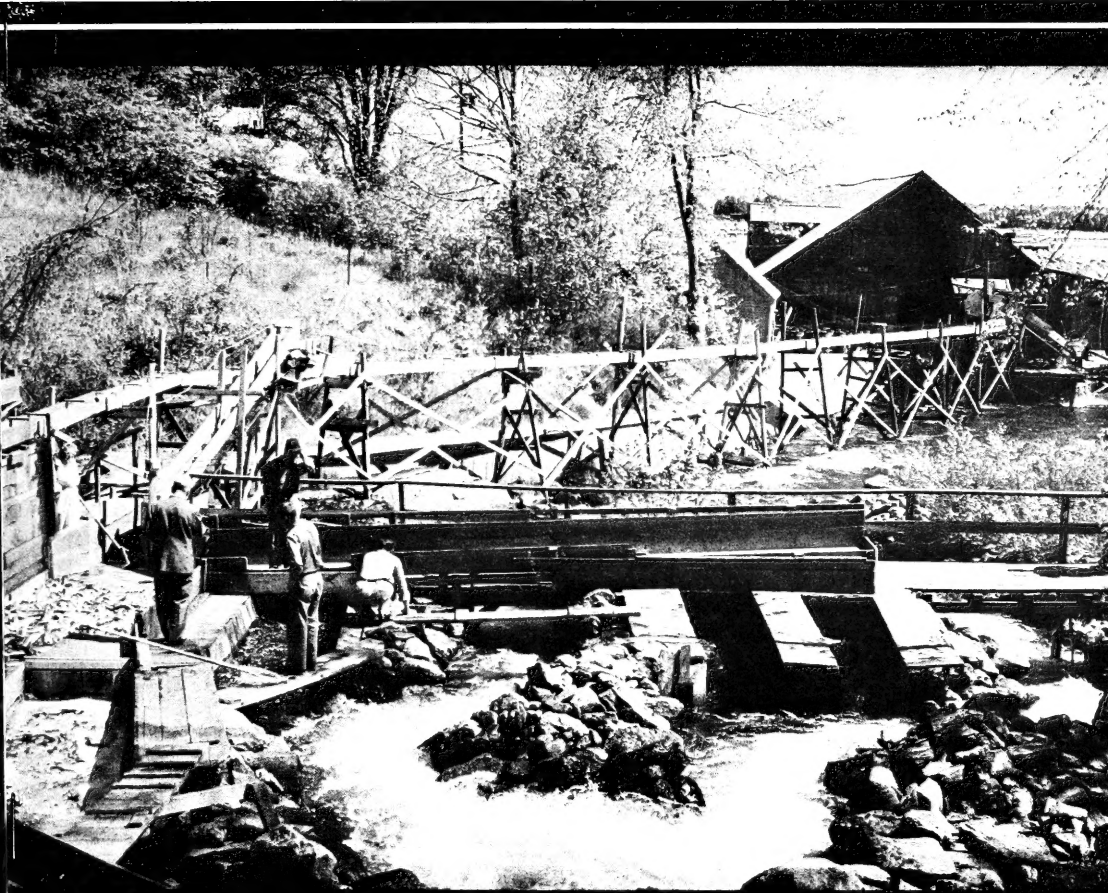


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COMMERCIAL FISHERIES REVIEW



Vol. 20, No. 5

MAY 1958

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Washington, D.C.



COMMERCIAL FISHERIES REVIEW



A review of developments and news of the fishery industries prepared in the BUREAU OF COMMERCIAL FISHERIES.

Joseph Pileggi, Editor
H. M. Bearse, Assistant Editor

Mailed free to members of the fishery and allied industries. Address correspondence and requests to the: Chief, Branch of Market News, Bureau of Commercial Fisheries, U. S. Department of the Interior, Washington 25, D. C.

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COMMERCIAL FISHERIES REVIEW

May 1958

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Vol. 20, No. 5

NEW ENGLAND'S INDUSTRIAL FISHERY

By Robert L. Edwards* and Fred E. Lux*

BACKGROUND

New England's industrial fishery began at the turn of the present decade as a result of at least two different fishery developments. The first of these was the failure of the sardine (pilchard) fishery on the West Coast, and the second, the extension of the menhaden fishery into New England waters. At this same time, the yellowtail flounder was suffering a decline in southern New England which forced a sizable group of smaller draggers to turn to other species for part of their income. The failure of the sardine fishery meant an increased need of meal from other sources. The plants that process menhaden also process other fish with some modifications, and fishermen in need of funds are willing to bring in less profitable species of fish. For these and other reasons, New England's industrial fishery now seems to be growing into a healthy and important part of the New England fishery economy.

The term "industrial fishery" as used here refers to only that part of the fishing industry that takes fish for reduction to meal or to a liquid concentrate. Generally speaking, there are two types of vessels that supply the bulk of this fish:

those which specialize in the so-called "trash" or industrial species only, and those which fish for both market and industrial species. The bulk of the industrial catch is landed at New Bedford and Point Judith. Closely related to this fleet of vessels, but not included here as part of it, are the boats that specialize in catches (whiting preferred) for mink food, and dog and cat food.

Fish for reduction are given no special treatment other than some sorting that may be necessary to sell certain species separately.

Table 1 - Industrial Fish Landings at Point Judith, New Bedford, and Gloucester--1949-56

Year	Pt. Judith, R. I.	New Bedford, Mass.	Gloucester, Mass.	Total
1956	102,254	27,496	15,954	145,704
1955	73,402	20,964	14,224	108,590
1954	58,595	20,113	22,671	101,379
1953	51,794	21,294	5,600	78,688
1952	29,247	16,417	66	45,730
1951	23,740	16,699	800	41,239
1950	9,404	56,041	5,500	70,945
1949	9,989	44,115	7,890	61,994
Total	358,425	223,139	72,705	654,269

LANDINGS

This industrial fishery really began in 1949 (Snow 1950 and Sayles 1951). The landings for three ports are listed in table 1. The catch at Point Judith has continued to increase and since 1951 has been more than double the catch at all other New England ports combined. New Bedford and Gloucester figures include relatively small amounts of fish landed as animal food. The abrupt change in New Bedford production

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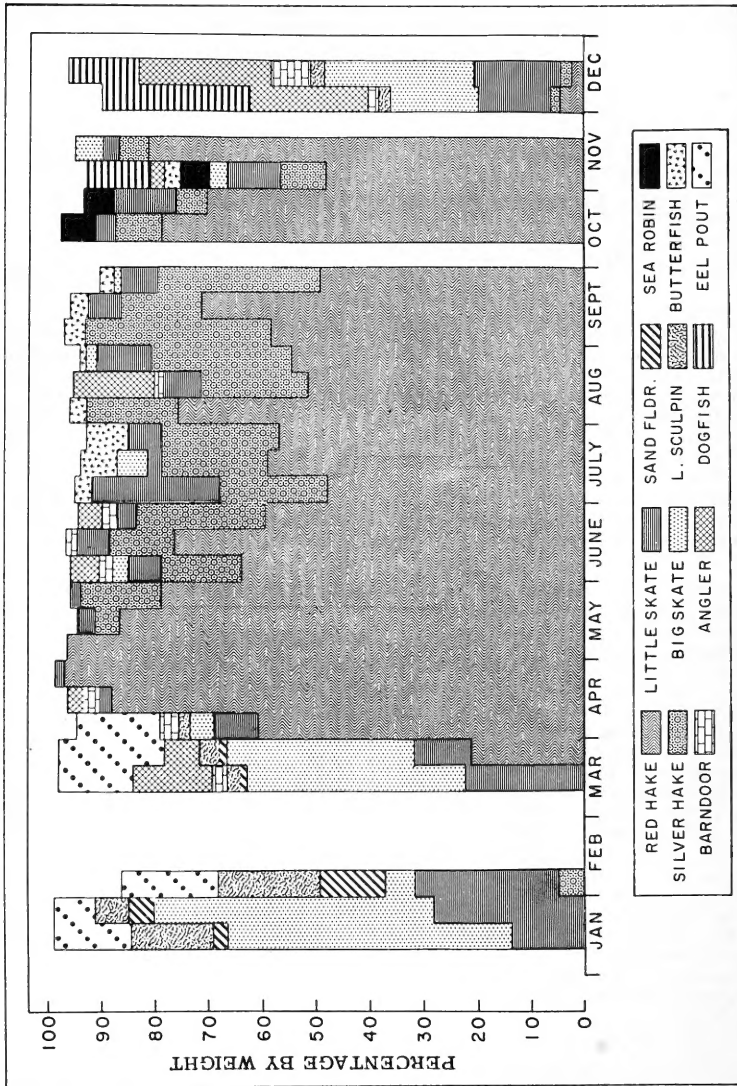


FIG. 1 - SPECIES COMPOSITION OF INDUSTRIAL FISH IN PERCENTAGE BY WEIGHT FROM NO. MANS. FISHING GROUND. (BASED ON SAMPLES TAKEN AT NEW BEDFORD AND POINT JUDITH DURING MAY 1955 THROUGH DECEMBER 1956.)

after nearly two years of heavy landings was brought about by a considerable drop in the price paid for industrial fish. Not all of the fish landed at Point Judith is processed there. A large quantity is trucked to another plant near Gloucester. All of the industrial fish landed at New Bedford is trucked out.

Aside from their value as a protein source, industrial fish products contain what are commonly referred to as unidentified growth factors. Fish concentrates are widely used in poultry feeds, and because of these growth factors, poultry raisers are getting more pounds of chicken in less time. While these growth factors are not all found exclusively in fish products, fish are an inexpensive source. New processes are currently being developed for the production of fish flour for human use. As additives to basic foodstuffs, such as cereals or bread, these may well become important in the diets of people in countries where proteins are scarce.

Capture and processing of the industrial species has become one of the important fishing industries of New England. As time goes on, the distinction between industrial and food fishes will become less sharp. This will raise the all-important question of best utilization of various fishes and could conceivably alter all our views concerning the management of a general marine fishery. For this reason, the industrial fishery should be given a long, hard look by biologists and members of the fishing industry, especially with respect to the future of the industry and whether or not it offers the best utilization of fish not generally utilized for food or the demand of which for food purposes is limited.

BIOLOGICAL STUDY INITIATED

A study^{1/} of the industrial fishery was established at Wood Hole in early 1955. An initial aim was to determine whether or not significant numbers of undersized yellowtail flounders were being landed in industrial trips. It was soon apparent that this problem was not the most important one. The best utilization of fish of any species and the stability of the industrial fishery itself were more important problems. This project has collected information for over 18 months now; it has answered many questions, and brought up even more questions. We are now in a position to begin to examine the entire problem of the utilization of a community of fish. Since most of the industrial fish have come from southern New England waters, the following discussion will be based on that area.

Regular sampling of industrial landings was begun in May of 1955. Samples were taken of trips from each of the more important fishing grounds frequently enough to provide a picture of the seasonal and local variations in the distribution of various fish species. Fig. 1 summarizes data collected from trips sampled from the fishing area southwest of Martha's Vineyard known as the "No Mans" fishing ground. Because this ground provides so much of the fish, it may be considered typical of the entire industrial fish landings from the southern New England area. The differences observed in other areas are not sufficiently great to change the general picture presented in the No Mans ground data.

^{1/}FINANCED WITH FUNDS MADE AVAILABLE BY THE SALTONSTALL-KENNEDY ACT OF 1954.

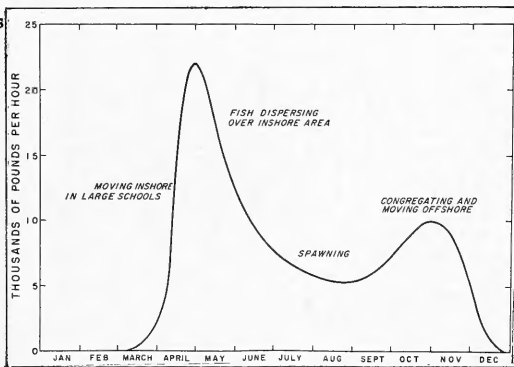


FIG. 2 - THE CHANGES IN ABUNDANCE (POUNDS PER HOUR OF FISHING) OF THE RED HAKE ON SOUTHERN NEW ENGLAND FISHING GROUNDS. (BASED ON INTERVIEW DATA DURING 1955 AND 1956.)

RED HAKE PRINCIPAL SPECIES

The red hake (*Urophycis chuss* Walbaum) is the principal species landed. The seasonal movements of this fish account for its variation in quantity throughout the year. Second in importance is the whiting or silver hake (*Merluccius bilinearis* Mitchell), a fish that is most abundant during the warmer months of the year. The red hake, whiting, and two species of skates--the common skate (*Raja erinacea* Mitchell) and the big skate (*Raja ocellata* Mitchell)--together account for all but a very small percentage of all of the industrial fish landed. During the colder months of the year, the catch is principally made up of the common skate, the big skate, the eel pout (*Macrozoarces americanus* Bloch and Schneider) and the sculpin (*Myoxocephalus octodecimspinosus* Mitchell). The commercially-important food fish are present in very small quantities. The butterfish (*Poronotus triacanthus* Peck), more than any other marketable food fish, is present in measurable amounts. At the present time there is no indication that the food fish are suffering from undue exploitation as industrial fish.

Table 2 - Quantities and Percentages of Various Species of Fish Landed by the Industrial Fleet at New Bedford During 1956 from the No Mans' Fishing Ground^{1/}

Species	Pounds	Percentage
	1,000 Lbs.	%
Red hake	17,024	68.1
Silver hake	3,390	13.6
Little skate	1,488	6.0
Butterfish	418	1.7
Anglerfish	407	1.6
Big skate	403	1.6
Barndoor skate	306	1.2
Sea robin	262	1.1
Eel pout	260	1.0
Spiny dogfish	259	1.0
Four spot	185	0.7
Long-horned sculpin	134	0.5
Sand flounder	102	0.4
White hake	86	0.3
Alewife	63	0.3
Yellowtail flounder	48	0.2
Haddock	13	0.1
Blackback	19	0.1
Smooth dogfish	21	0.1
Scup	9	-
All others	101	0.4

^{1/}BASED ON AN ESTIMATED 25 MILLION POUNDS LANDED FROM THE NO MANS GROUND.

A breakdown by species based on samples of the catches from the No Mans ground landed at New Bedford during 1956 is presented in table 2. A total of 27.5 million pounds of industrial fish were landed there during 1956. The figures are based on an estimated 25 million pounds landed from the No Mans ground.

Without the red hake there would be no industrial fishery of importance, all other things being equal. It is abundant and not in great demand as food. Should the abundance of this species markedly decrease, the industry could not be maintained at its present level even if new

fishing areas were exploited and some of the present food species were included in the industrial portion of the catch.

ABUNDANCE

It must be remembered that there is no stability in time for these communities of fish; they vary both seasonally and annually. Undoubtedly, some of the long-term changes are cyclic rather than irregular, but the fact remains that these communities are always in a state of change. The long-term changes, especially those related to changes in the physical environment, may be deduced from the seasonal changes when enough information on both the fish and the environment has been gathered. The seasonal changes in abundance, measured in terms of catch per hour, can be dramatic. For example, in fig. 2, the changes in abundance throughout the year

for red hake from No Mans ground for the past two years show the effect of seasonal movements. The fish move inshore early in the spring. At this time of the year they apparently are in tight schools, since boats may catch as much as 60,000 pounds an hour at this time. Shortly after their arrival inshore they begin to disperse over the fishing grounds and peripheral areas and the catch drops to around 5,000 pounds an hour. The red hake spawn from July to early September with the peak occurring in the middle of August. This period coincides with a lowered level of abundance. Following spawning, concentrations again appear and the catch rises for a short while before the fish move offshore. Early in December the catch on this ground has fallen to a small fraction of the spring abundance.

THIRTY SPECIES INCLUDED

There are approximately 30 species of significance involved in this industrial fishery, including those sold for the food market. Fig. 3 combines seasonal and an-

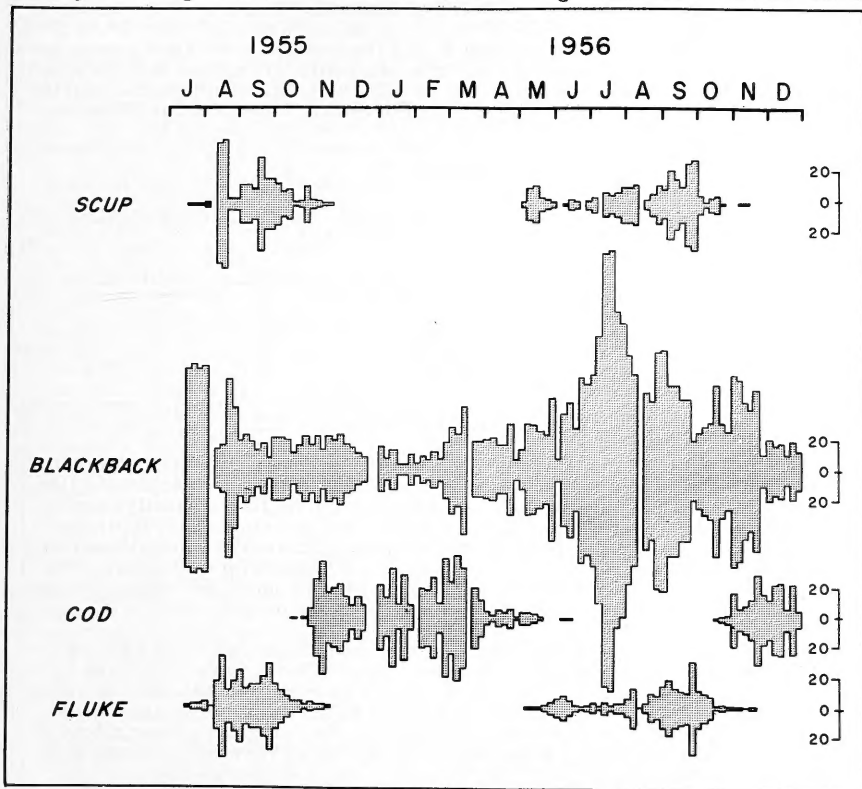


FIG. 3 - THE ABUNDANCE OF SCUP, BLACKBACK FLOUNDER, COD, AND FLUKE IN POUNDS PER HOUR FROM SOUTHWEST GROUND (OFF POINT JUDITH BREAKWATER) FOR THE PERIOD JULY 1955 THROUGH DECEMBER 1956.

nual change, illustrating the changes in density of four food species. The data used here were collected from trips from "Southwest ground," a fishing ground just south

of the breakwater at Point Judith. The blackback flounder (*Pseudopleuronectes americanus* Walbaum) is the most important in terms of poundage. It reaches its peak of abundance in the summer months in Southwest ground, after which it tends to move out into other areas. The blackback catch during the latter part of 1956 was almost double that of the same period in 1955. This increase in 1956 was not restricted to Southwest ground, but more or less typical of the entire area. Following the peak of blackback flounder, the fluke (*Paralichthys dentatus* Linnaeus) builds up in numbers. It is worthy of note that there were considerably fewer fluke caught in Southwest ground in 1956 than in 1955. The abundance pattern of the scup (*Stenotomus versicolor* Mitchell) is similar to that of the fluke and indicates that both species are influenced by similar environmental factors. The cod (*Gadus callarias* Linnaeus) begin to move through the area on their way to the New Jersey spawning grounds at the time when the fluke are leaving for the winter. All of these species are migratory to a degree. All species as well tend to fall into one of the three general types illustrated in figure 3. These types are: the more-or-less permanent residents that may show considerable shifts in abundance, such as the blackback flounder; types that are present during the colder months of the year, such as the cod; and types that are present only during the warmer months of the year, such as the fluke and scup. As time goes on, this information, combined with the proper hydrographic information, should make it possible to predict shifts in the species community as they relate to hydrography and to evaluate the influence of one species upon another.

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FLATFISH HAVE EYES ON ONE SIDE

Fish are said to be closely "tied" to their environment, this is, in their evolution natural selection favors inheritance of features which adjust the fish better to its particular mode of life. Bottom-dwelling fishes usually become flattened with the eyes on top of the head, and the mouth below. The "flatfishes" (flounders and their kin) represent another group of free-swimming fishes that have taken up bottom life, but have accomplished it in a different manner. The flounder swims on its side, and during its early development one eye migrates to the opposite side of the head, so that both eyes are on one side.

In most instances, all color pattern is missing from the blind side, while the eyed side has a pattern adjustable to the type of bottom on which the fish finds itself at any moment. The larval flatfish has its eyes situated normally and swims freely, as do most other fishes. With the migration of the one eye, a bottom existence is adopted. Interestingly, there are left and right-eyed families of flounders and of soles, but a few species have both left and right sided individuals.

--Sea Secrets, October 1957

The International Oceanographic Foundation,
Coral Gables, Fla.

TWENTY-FIVE YEARS OF RESEARCH AND SERVICE BY THE SEATTLE TECHNOLOGICAL LABORATORY

By Maurice E. Stansby*

SUMMARY

In connection with marking the twenty-fifth anniversary of the founding of the Seattle Fishery Technological Laboratory in May 1958, the activities of the Laboratory are reviewed. In the prewar period, programs dealt largely with fishery industrial products. Many special activities were taken on during the war years including such work as finding substitutes for items in short supply that are used by the fisheries. Much work on vitamin A-containing fish oils also was carried out during this period. A diversified program resulted after discontinuation of wartime activities. In the current period, with Saltonstall-Kennedy funds available, the program has been broadened with somewhat greater emphasis on basic research.

Outstanding accomplishments over the past 25 years have been reviewed. A total of 267 publications were released by the Seattle Laboratory, about half of them being concerned with analytical methods, frozen fish, and processing of fish meal and fish oil. One accomplishment alone saved the Government over \$8 million, an amount several times the entire operating cost of the Laboratory over the 25-year period.

Current activities of the laboratory are reviewed. The functions of the Laboratory--basic research, applied research, and services to the fishing industry--are described, and details of the current programs, organization of the Laboratory, and Laboratory facilities are outlined.

INTRODUCTION

On May 2, 1933, the Seattle Fishery Technological Laboratory was opened at its present location on Montlake Boulevard. Thus 1958 marks the Laboratory's twenty-fifth anniversary. This report reviews the activities and accomplishments during the 25 years of operation and describes the current organization and programs.

ACTIVITIES

The activities of the Seattle Laboratory can be considered under four periods of time: the prewar period (1933-1941), the war period (1942-1946), the postwar period (1947-1954), and the current period (1955-1958).

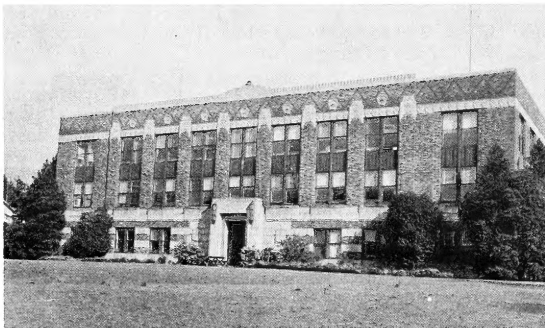


FIG. 1 - BUILDING THAT HOUSES SEATTLE TECHNOLOGICAL LABORATORY, U. S. BUREAU OF COMMERCIAL FISHERIES.

PREWAR PERIOD (1933-1941): At the inception of the program in 1933, with only two employees on the staff, the program had to be limited to a few narrow fields. During the first several years, the program dealt exclusively with utilization of salmon waste and fish livers for production of fishery industrial products.

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In 1937 the assignment of several W. P. A. chemists to the Laboratory and, later, in 1939 and 1940 the addition of two regular staff members made it possible to broaden the program somewhat to include limited investigations on composition and preservation.



FIG. 2 - THE PILOT PLANT OF THE SEATTLE FISHERY TECHNOLOGICAL LABORATORY OCCUPIES THE FIRST SMALL BUILDING TO THE LEFT OF THE MAIN BUILDING.

Extensive programs were carried out on utilization of salmon waste. Temporary field laboratory operations were carried out both in Alaska and on the Columbia River. Rendering methods for producing an edible salmon oil to be added to canned salmon were developed. Considerable

basic information on chemical properties of salmon oils was obtained. Investigations were carried out on the heating of fish meals that occurs after they leave the driers. Improvements were made in methods for rendering oils from fish livers, and collaborative work was carried out with the U. S. Food and Drug Administration in connection with preparation of standardized samples of halibut-liver oil. Research was begun to improve the analytical methods for determining the oil content of fish meals.

Studies were carried out on the freezing and cold-storage life of commercially-important species of fish in the Pacific Northwest. It was shown that frozen fish can be stored in food lockers without damage to other frozen foods. Research was carried out on freshness tests for fish, including tests for oxidative rancidity. The proximate composition of some Pacific Northwest species of fish was determined.

An investigation was carried out over a 2-year period on the utilization of king crab in Alaska.

The early prewar period was important not only for the accomplishments of the research but also for development of the Laboratory and for setting up good relationships with the fishing industry.

WARTIME PERIOD (1942-1946): In 1942, the emphasis of the program was directed toward solving special wartime problems. Six programs concerned with wartime problems were undertaken. In order that these programs could be carried out adequately, the activities of the Laboratory were expanded. Professional-grade personnel were increased from the maximum of 4 reached during prewar to 15, and the budget was more than trebled.

The war projects included work on dehydration of fish, substitute containers for tinplate, seaweed substitutes for agar, assistance to the Army Quartermaster Corps, assistance to other wartime agencies such as the War Production Board, and better utilization of certain species of fish.

Much of the assistance to government agencies consisted of developing standards and analytical methods to facilitate Government purchases of vitamin A oils and livers, and the vitamin A project became, during this period, the largest one in the Laboratory. Work was carried out on stability of vitamin A, analytical methods for vitamin A, vitamin A content of fish livers, and conservational aspects of the shark fishery.

In connection with better utilization of certain species of fish, the Reconstruction Finance Corporation was assisted in designing and outfitting the vessel Pacific Explorer, which was built for freezing fish fillets at sea.

POSTWAR PERIOD (1947-1954): The beginning of the postwar period was marked by a drastic reduction in budget and personnel as wartime projects were terminated. In 1947, a 50-percent cut in operating funds necessitated dropping 8 employees.

Considerable emphasis during this period was placed on aiding industry to solve problems encountered in the freezing and cold storage of fish. Special emphasis was placed on cold storage of king crab, the output of which had been expanded markedly, and on rockfish, the production of which had increased greatly during the war and for which civilian demand had not kept pace. Efforts were made to increase markets for this fish. Work was carried out to demonstrate the feasibility of freezing fish at sea in the round, thawing them ashore, and filleting and refreezing them. Work was also carried out on problems encountered in freezing salmon for later canning.

A large program sponsored in part by the Industrial Research and Development Department of the U. S. Department of Commerce was carried out toward better utilization of Alaskan salmon waste. As an extension of this work, Federal and State fish hatcheries were assisted in the utilization of fish waste for hatchery feeds.

Considerable work was done to determine the content of vitamin B₁₂ and unidentified growth factors in fish meal. As an extension of a prewar project, a new method was developed for the determination of oil in fish meal.

Certain problems involving the storage life of halibut and salmon steaks cut from the frozen, stored fish were worked on cooperatively with industry. A fellowship from Continental Can Company financed a study of the causes of discoloration in tuna cans. A study of the protein-water relationship in fish, including the development of methods for measuring drip, was carried out.

An investigation was made of the composition and cold-storage life of freshwater fish. Because no technological laboratory is located in the Central States, very little was known concerning the technology of fish taken in that area. Analyses and cold-storage examinations were carried out on a large number of species of fish from the Great Lakes and Mississippi River areas.

Two projects dealing with fish meal and fish oil were started late in the postwar period. Results of investigation by research workers at the Poultry Husbandry Department of the University of California indicated a wide variation in nutritive value among different batches of fish meal. Work was started at Seattle to study the causes of this variation and to develop a chemical method of determining fish-meal nutritive value. In another project, work was started to investigate the possibilities of preparing potentially valuable chemical derivatives from fish oils.



FIG. 3 - LABORATORY IN PILOT PLANT BUILDING.

CURRENT PERIOD (1955-1958): The current period is featured by the increase of funds provided for technological research by the Saltonstall-Kennedy Act of



FIG. 4 - A MIXTURE OF FISH-OIL GLYCERIDES BEING HYDROLYZED BY SODIUM-REDUCTION REACTION TO PREPARE FATTY ALCOHOLS.

1954. Initially, the main expansion in programs was in the form of contract research at various university laboratories and other laboratories. Later, some expansion in Bureau laboratory programs took place. Programs carried out under Saltonstall-Kennedy funds, either at the Seattle laboratory or on contracts elsewhere and coordinated from Seattle, have been in the following fields: fish meal, fish oil, standards, irradiation, tuna handling, and rockfish utilization. The first two on meal and oil were started as limited Seattle Laboratory investigations. Now with Salton-

stall-Kennedy funds they have been broadened into comprehensive nationwide programs. At the express recommendation of fishery-industrial-products representatives, a substantial portion of these investigations has been basic research. Programs on contract with Hormel Institute, University of Minnesota, deal with the chemistry and nutrition of fish-oil fatty acids; other programs at the University of California, Food Technology Department, deal with oxidative deterioration in fish oils and in fish tissue. A program at the Seattle Laboratory carried out by organic chemists is concerned with the preparation of chemical derivatives of fish-oil fatty acids. This basic approach is producing the fundamental information needed for solving practical problems at an applied level. Some applied problems were undertaken simultaneously with the basic research. These deal, for example, with the use of fish oils in animal feeds and in ore flotation.

Fish-meal programs are being carried out at the Seattle Laboratory and on contracts at the Poultry Husbandry Department of the Universities of California and Wisconsin. These programs are investigating causes of variation in nutritive value of different batches of fish meals.

Other current programs at the Seattle Laboratory deal with the determination of chemical composition and with the freezing and storage of fish. These programs are supported, in part, by grants from The Refrigeration Research Foundation. Proximate composition and sodium content of both fresh-water and marine fish are being investigated. Cold-storage studies are being carried out on fresh-water fish, and marine fish, and Pacific oysters.

Special emphasis is given to assisting the fishing industry in solving its problems. Efforts are made to disseminate results of these research programs rapidly to the fishing industry both by the publishing of digest reports and by the giving of direct reports at meetings attended by members of industry.

ACCOMPLISHMENTS OF SEATTLE LABORATORY

PUBLICATIONS: One way of reviewing the accomplishments of the laboratory is to analyze the research reports that have been published. Table 1 lists by subject the number of publications issued each year. Table 2 lists the total number of

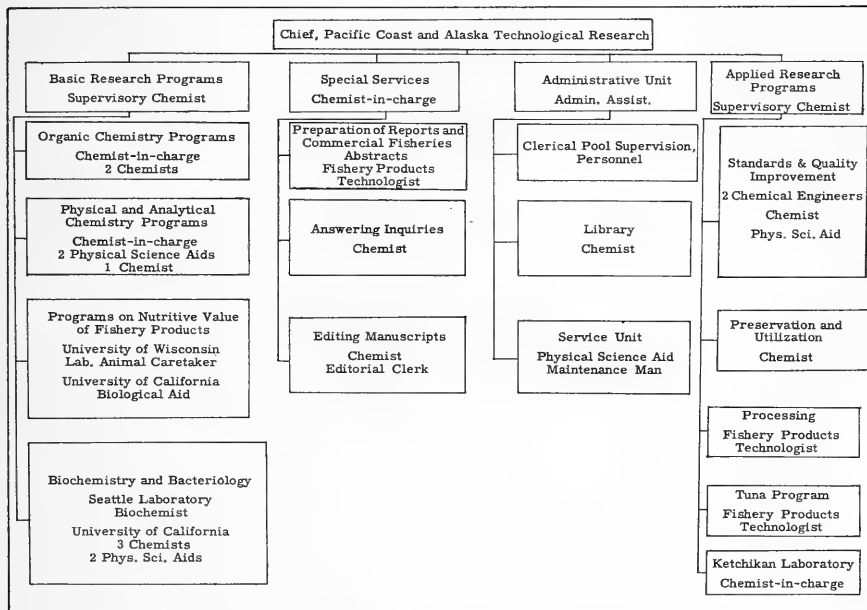


FIG. 5 - ORGANIZATION CHART OF SEATTLE FISHERY TECHNOLOGICAL LABORATORY.

publications on each subject. A total of 267 papers has been published from the time the Laboratory was established through 1957. The number of papers rose from 1 or 2 per year during the early prewar years to a maximum of 26 in 1945; the numbers then declined during the postwar years when the size of the Laboratory staff diminished. Since the start of the Saltonstall-Kennedy programs, the number of papers has increased to 26 in 1957. Thus the number published last year is equal

Table 1 - Seattle Laboratory Publications by Subject and Year

Year	Analytical Methods	Canned Fish	Chemical Composition	Fish Oil Chemistry	Fish Meal and Oil Processing	Frozen Fish	Handling Fresh Fish and Spoilage	Miscellaneous	Utilization of Fish and Waste	Total
1957	4	1	3	8	1	1	2	5	1	26
1956	1	3	2	3	1	7	1	1	-	19
1955	2	1	4	3	1	7	-	1	1	20
1954	1	1	3	-	3	3	1	3	-	12
1953	1	1	-	-	3	3	-	-	2	10
1952	2	-	-	1	3	-	-	1	2	9
1951	1	2	-	2	3	-	-	4	1	13
1950	3	1	3	-	4	-	-	2	1	14
1949	5	-	3	1	1	1	-	2	-	13
1948	2	2	-	1	1	3	-	4	-	13
1947	7	1	1	-	2	3	4	3	1	22
1946	7	1	1	-	2	2	-	4	2	19
1945	5	1	3	4	3	3	2	3	2	26
1944	7	-	-	1	2	1	-	3	2	16
1943	1	-	-	-	-	-	1	1	1	4
1942	2	-	-	-	1	1	-	4	-	8
1941	1	-	-	2	1	1	-	-	-	5
1940	-	-	-	-	3	2	-	-	-	5
1939	1	-	-	1	1	-	-	-	-	2
1938	1	-	-	-	1	-	-	-	-	2
1937	1	-	-	2	1	2	-	-	-	6
1936	-	-	-	-	1	-	-	-	-	1
1935	-	-	-	-	1	-	-	-	-	1
Total	55	15	23	29	37	40	11	41	16	267

to that of the wartime peak. As these programs get into full production, a further increase in the number of research reports is anticipated.

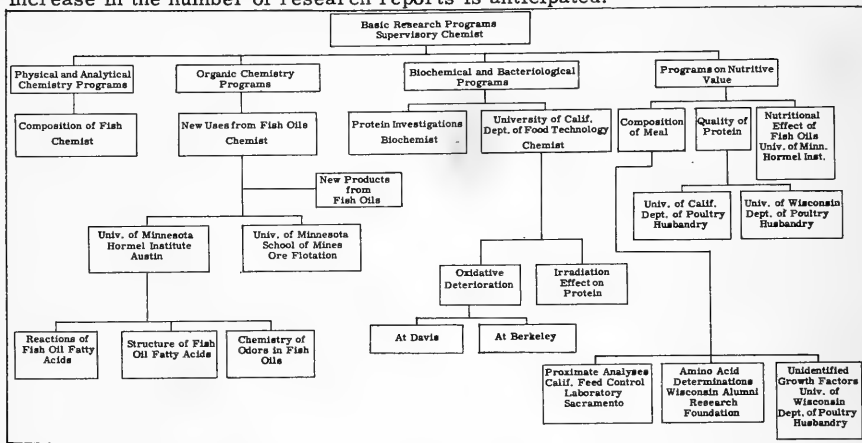


FIG. 6 - DETAILS CONCERNING BASIC RESEARCH PROGRAMS CARRIED OUT AT OR COORDINATED FROM SEATTLE FISHERY TECHNOLOGICAL LABORATORY.

Papers on analytical methods outnumber those in any other single category (55 papers). This field is one specially suitable for governmental research because it involves a type of study of vital importance to wide groups of people in the commercial fisheries; yet paradoxically, it is a field in which there is little or no direct

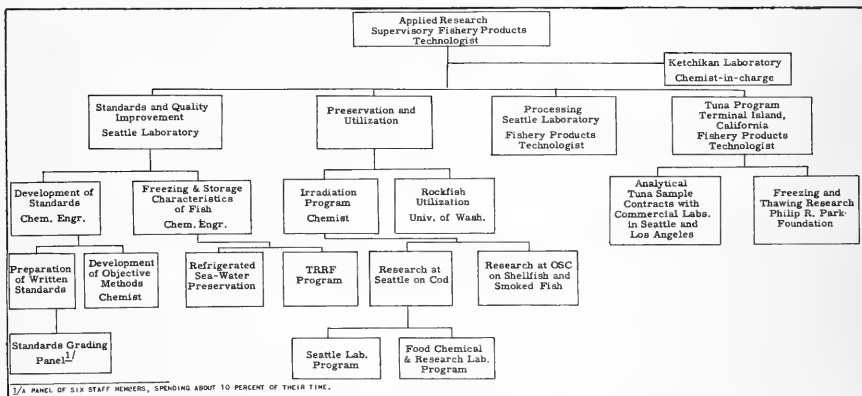


FIG. 7 - DETAILS CONCERNING APPLIED RESEARCH PROGRAMS CARRIED OUT AT OR COORDINATED FROM SEATTLE FISHERY TECHNOLOGICAL LABORATORY.

profit motive for private enterprise to undertake the work. Analytical methods are needed for use with a wide variety of fishery products for which special adaptations of standard analyses are required. Such methods are used by fishery technologists and chemists at all levels of the fishery industry, such as in processing fishery industrial products, in preservation, and in quality control. Reports on frozen fish is the next largest category of papers, followed by fish-meal and oil processing, fish-oil chemistry, and composition of fish.

A bibliography at the end of this report includes a listing of 75 of the 267 publications of the Laboratory. This list was compiled to include the most significant papers of current interest. Many important reports that are now of little interest have been omitted, especially in the field of fish livers and vitamin A.

This situation demonstrates how changing conditions require changing emphasis in research. A continuing program of research is needed that is geared to the ever-varying problems of the industry.

HIGHLIGHTS: It is difficult to compile a list of the most important achievements of a Laboratory. Different accomplishments would be selected by different persons. Almost any list, however, would include the following:

In the early prewar period, the aid given by the Seattle Laboratory in the development of methods for extracting oil from salmon trimmings for adding back to canned salmon was of great value. The practice of adding salmon oil to the canned salmon pack has been used both in Alaska and on the Columbia River, and it still is of major importance in the latter area. The more fundamental work carried out on chemical properties of salmon oils and published as the investigational report Pacific Salmon Oils (Harrison, Anderson, Pottinger, and Lee 1939) is still the standard reference in this field.

During the war period, the project on vitamin A resulted in worthwhile accomplishments. The development of a practical fish-liver sampler by the Seattle Laboratory changed the marketing pattern for the vitamin A industry. Work carried out for the U. S. Customs Service saved the Federal Government an estimated \$8 million. This saving alone repaid, several times over, the total cost of operating the Seattle Laboratory during its entire past life.

Subject	No. of Publications
Analytical methods	55
Miscellaneous	41
Frozen fish	40
Fish meal and oil processing	37
Fish oil chemistry	29
Composition of fish	23
Utilization of fish and waste	16
Canned fish	15
Handling fresh fish and spoilage	11
Total	267

In the postwar period, several major achievements have resulted. The conception, setting up, and preparation on a continuing basis, by the Seattle Laboratory staff, of the monthly periodical Commercial Fisheries Abstracts have been of great value. This method of getting results of technological and scientific research to the fishing industry proved so successful that it served as an incentive to the Food and Agriculture Organization to set up, for worldwide coverage, a parallel journal World Fisheries Abstracts, published in three languages and abstracting many foreign-language fishery articles not covered in Commercial Fisheries Abstracts.

The work carried out by Seattle Laboratory staff members on utilization of Alaska cannery waste has resulted in commercial utilization of such waste in two Alaskan areas where, previously, all salmon waste had been discarded. The work carried out on fresh-water fish provides the first comprehensive information available on proximate composition and cold-storage life of these fish. The work, started in the prewar period and completed after the war, on determination of oil in fish meal resulted in adoption by the Association of Official Agricultural Chemists of a new official method for analyzing the oil content of fish meal.

It is perhaps too early in the current period, which started in 1955, to appraise the relative importance of current accomplishments. It seems likely that the

setting up of programs to carry out basic research, particularly in the field of fish-oil chemistry, will rank of highest importance. More basic information is needed by the Pacific Coast fisheries not only for use in processing fish oil but even more in connection with problems concerning oxidative rancidity and discoloration. Pacific Coast species of fish are more susceptible to this type of change than are principal species in other areas. Important limitations to the utilization of salmon, tuna, and halibut are caused by oxidative changes occurring during processing and storage. The principal New England species--haddock, cod, and ocean perch--are relatively immune to such deterioration. Already, important results have been obtained toward establishment of the chemical structure of fish-oil fatty acids. Much has been done to elucidate the mechanism of oxidation of fish oils. The structures of pigments in tuna have been identified, and means for controlling discoloration during the processing of this species have been worked out. Studies under way promise eventually to result in more complete knowledge of the role of enzymes in deterioration of fish oils and fish tissue.

CURRENT ACTIVITIES OF LABORATORY

FUNCTIONS: The Seattle Fishery Technological Laboratory is primarily a research Laboratory. Unless the results of its research can be brought to the attention of those who need them, its work will not be effective. A very important function, therefore, is the dissemination of information. This is done through preparation of written bulletins and papers, answering written inquiries, consulting personally with individuals in the fishing industry, and holding occasional meetings to discuss research findings and problems of the industry. The Special Services Unit stationed at the Laboratory edits papers from the other Branch of Technology Laboratories on the Atlantic, Gulf, and Pacific Coasts.



FIG. 8 - SCENE IN PILOT PLANT. HERRING BEING PREPARED TO PRODUCE A MEAL FOR USE IN ANTIOXIDANT STUDIES.

section is divided into subsections according to the field of scientific specialization: organic chemistry, physical and analytical chemistry, nutrition, and biochemistry and bacteriology. The applied research section also is divided into subsections. These are as follows: standards and quality improvement, preservation and utilization, processing, and tuna programs. The Ketchikan Laboratory program is coordinated with that of the Seattle Laboratory through the Applied Research Section.

its research can be brought to the attention of those who need them, its work will not be effective. A very important function, therefore, is the dissemination of information. This is done through preparation of written bulletins and papers, answering written inquiries, consulting personally with individuals in the fishing industry, and holding occasional meetings to discuss research findings and problems of the industry. The Special Services Unit stationed at the Laboratory edits papers from the other Branch of Technology Laboratories on the Atlantic, Gulf, and Pacific Coasts.

ORGANIZATION AND PERSONNEL:

The organization of the Seattle Laboratory is shown in figure 5. All staff members who are Bureau of Commercial Fisheries employees whose technological program is supervised or coordinated from Seattle are shown in this figure. Thus, employees stationed at the University of California are included. The contract research programs are not shown in this figure. Such contracts are listed in figures 6 and 7.

The personnel are divided among four sections: basic research, applied research, special services unit, and administrative unit. The basic research

All staff members participate in performing services for the fishing industry. In addition, certain activities involving written material, including preparation of Commercial Fisheries Abstracts, are handled by the Special Services Unit.

FACILITIES: The Seattle Fishery Technological Laboratory operates its basic research and administrative functions in the main building of the Bureau of Commercial Fisheries Montlake Laboratory. Three chemical Laboratories and an instrument room are available for this work.

The applied research activities are carried out in an adjacent, smaller building known as the Pilot Plant. A large room is available for processing fish meal and canned fish, another for handling fresh fish for filleting, packaging, and similar activities. A cold-storage section provides rooms at three temperatures, and an icing room also is available. A general chemical laboratory, two offices, and an organoleptic examination room are located on the second floor of the pilot-plant building.

The Special Services Unit occupies rented space in the basement of the Montlake Apartment Building located adjacent to the Montlake Laboratory property.

CURRENT PROGRAM: The activities of the Laboratory are organized under the following general headings: (1) control of chemical alterations in fish and fishery products during storage and processing (includes all basic research projects), (2) preservation and processing of fish and shellfish, (3) development of voluntary standards of grade for fish and fishery products, (4) services of Special Services Unit, (5) direct assistance to industry, and (6) assistance to contract research.

Details concerning basic and applied research programs are shown in figures 6 and 7. Included in these figures are details concerning (1) programs carried out at the Seattle Laboratory, (2) programs carried out by Bureau employees of the Seattle Laboratory stationed at cooperating universities, and (3) programs carried out on contracts with the Bureau of Commercial Fisheries and coordinated by the Seattle staff.

PARTIAL SUBJECT BIBLIOGRAPHY OF CURRENTLY-IMPORTANT PAPERS OF SEATTLE LABORATORY

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OXIDATION RESEARCH SHOWS REASONS FOR QUALITY DETERIORATION OF CERTAIN FOODS

Fundamental research on the effect of oxidation on fishery products has shown that the same basic mechanism involved in the discoloration of canned tuna is also involved in some forms of rancidity of fishery products as well as in the deterioration of some forms of fish meal. The commercial fishing industry is already testing many of its processing practices to take advantage of these recent discoveries.

Technologists of the U. S. Bureau of Commercial Fisheries believe also that the findings may have application in the meat industry and possibly in other food industries. The studies, which began in 1955, are being financed through funds made available by the Saltonstall-Kennedy Act of 1954. The work is being done at the Bureau's Fishery Technological Laboratory, Seattle, Wash.; and at the Food Technology Department and the Institute of Marine Resources, both at the University of California.

A number of significant findings have resulted from the basic research approach to the problem of oxidative deterioration. It has been proved that some forms of oxidative rancidity in the tissue of fish are accelerated by the presence of hematin. Hematin is the hydroxide form of the iron-bearing protein which comprises a portion of the respiratory protein, hemoglobin, commonly found in the red blood cells. The dark meat of fish which contains most of the hematin compound absorbs oxygen to a much greater extent than does the light meat. A series of tests amply demonstrated that the content of hematin is a major factor in determining the rate at which fish meals deteriorate.

Research conducted on the catalytic effects of hematin compounds on oxidation of fish oils has helped to clarify the process-induced problem of discoloration during the precooking of tuna. Previous to this work the chemical changes that resulted in "green" tuna were completely unknown. Preventive steps can now be taken prior to processing to inhibit its development.

Similarly, it was demonstrated that fish meals which deteriorated most rapidly were highest in their content of hematin compounds. Corrective measures now cut this rapid oxidation down to a fraction of its original rate.



PROGRESS REPORT ON FISH-MEAL RESEARCH

Approximately 265,000 tons of fish meal worth almost \$35 million is produced annually in the United States and its territories. Of this amount, approximately 80 percent is used by chicken farmers in feed formulations. To be of greatest value

for this use, fish meal should, as far as is commercially feasible, be a standardized product. This standardization is difficult to achieve, however, as the tremendous variation inherent in the raw material as well as the differences in methods of manufacture are difficult to overcome.

The initial approach to the problem by the U. S. Bureau of Commercial Fisheries has been to discover those factors that adversely affect the nutritive value of the fish meal. The study was begun in 1955 when funds provided by the Saltonstall-Kennedy Act of 1954 were made available. A joint investigation of the nutritional value of fish-meal protein is being carried out by workers at the Universities of California and Delaware and in the Bureau's Branch of Technology. The objectives of this research are (1) to survey the variability of protein quality in commercially-prepared fish meals and (2) to discover the causes of these variations.

The investigation of the causes of variability in protein quality includes studies on the effects of (1) raw material, (2) storage, and (3) processing conditions. In conjunction with these studies, a chick assay was developed for the measurement of "available" amino acids.

Although final conclusions have not been reached on the relative importance of any of the factors studied, it has been found that the condition of the material used to prepare the meal can affect nutritive value. Meal made from cooked tuna waste that had subsequently been allowed to spoil did not permit growth of chicks, whereas meal prepared from cooked fish that was unspoiled or from raw fish--whether unspoiled or spoiled--permitted good growth.

An important result of these investigations has been the development of an assay to measure, in the meal, the amounts of individual amino acids that are in a form available for use by the chicks. The assay has now been found to be apparently successful for lysine, methionine, arginine, threonine, and combined methionine and cysteine. The assay also shows promise for histidine, phenylalanine, tryptophane, and combined phenylalanine and tyrosine.



THIS CROAKER A THREE-TIME LOSER, BIOLOGIST FINDS

People are said to be accident-prone when they continuously suffer mishaps. But some fish are accident-prone too, says Frank J. Wojcik, biologist at the Virginia Fisheries Laboratory, Gloucester Point.

Fishing from a pier here recently, Wojcik caught a croaker bearing a Virginia Fisheries Laboratory tag. Much to his astonishment, he found that this was the same fish he had caught three weeks before at the same place.

The croaker was caught originally by Wojcik on June 27, and was tagged and released by Tony Pacheco of the Laboratory staff. Exactly one month later the fish was caught again at the same place by the same fisherman. He noted the number on the tag and released it again, never dreaming that it would take his hook once more. But bite it did, almost exactly three weeks later.

Wojcik believes that he has solved the age-old problem of the sport fisherman. By releasing the fish he catches, he ensures good fishing for himself and his friends in the future.



TRENDS AND DEVELOPMENTS

Alaska

FISHERY REGULATIONS FOR 1958 APPROVED: Forecasts by Director Donald L. McKernan of the Bureau of Commercial Fisheries that the pink salmon runs in southeastern Alaska should be considerably better this year than in the previous comparable period are reflected in some relaxation in the 1958 commercial fishing regulations approved April 3 by Secretary of the Interior Fred A. Seaton.

The Department's action, which will permit a small increase in fishing effort by the principal forms of gear used in the fishery, represents the first relaxation of the substantial curtailments which were instituted in 1954 in an effort to halt the decline of the salmon fishery.

"Rehabilitation of the pink salmon runs in Southeastern Alaska was started in 1954," McKernan reported to the Secretary. "The program consisted principally of a reduction in trap fishing effort and on increases in closed areas where purse seines are normally used. This resulted in increased escapements, particularly in the even-year cycle. Pink salmon have a two-year cycle, and since our data indicate that the 1958 runs should be a great deal better than the parent year of 1956, some relaxation is warranted."

Secretary Seaton stated that he has directed the Bureau of Commercial Fisheries to maintain a close watch on the fish runs in Southeastern Alaska. "If this prediction of a better run of pink salmon does not materialize," the Secretary declared, "immediate steps will be taken to assure proper conservation."

Assistant Secretary Leffler assured Secretary Seaton that the Bureau of Commercial Fisheries will, if necessary, exercise the authority contained in the 1958 regulations providing for the immediate reduction in the use of fish traps and other gear or further restrictions to conserve the fish runs.

The Secretary requested Leffler to report to him periodically on the progress of this year's salmon run.

The use of drum seines and power blocks on purse-seine boats in Southeastern Alaska, restricted as a part of the restoration program in 1954, will be permitted this year. The use of this more efficient gear has been permitted in previous seasons elsewhere in Alaska.

The regulations approved today will permit utilization of a maximum of 246 of the 406 available fish trap sites for all of Alaska. This compares with 247 fish trap sites used in 1956, which is a comparable year because of the two-year life cycle of pink salmon, the major species involved.

The pink salmon fishery in Prince William Sound in 1958 will be controlled by a gear timetable in which the closing date is automatically adjusted according to the number of units of gear fished.

There are no substantial changes in the commercial regulations concerning Cook Inlet, Kodiak, and Chignik.

The closing date for the pink salmon fishery on the south side of the Alaska Peninsula has been tentatively set for August 5, but with the prospect that it may have to be closed earlier if expected runs do not materialize. The fall season opens August 18.

A few gill-net boats fished in 1957 in the Unimak District, and in line with policy established in other areas, such fishing is being prohibited since the runs of red salmon taken there are known to be destined for Bristol Bay and are fully utilized by existing gear.

The runs of red salmon in Bristol Bay are expected to be smaller than in 1957 and greater protection will be given the runs during the coming year.

The interest shown last year by Assistant Secretary Leffler in the problem of reducing materially the unsporting practice of salmon snagging in Alaska has led to an amendment which will control the size of hooks that may be used in personal-use fishing. This problem of snagging salmon on the spawning grounds has become serious in the vicinity of a number of population centers, and was particularly bad last year in the Salcha River near Fairbanks where numbers of king salmon of such poor quality as to be unfit for human consumption were snagged off the spawning grounds.



The Assistant Secretary personally observed the practice and declared: "The unpleasant byproducts of this snagging practice are a step backward rather than forward in conservation education." He stated further: "If this regulation is not sufficiently effective to control the practice, it may be necessary to close certain rivers to sport fishing for salmon entirely."

The regulations as issued this year have been completely recodified for the first time since 1949. The opportunity was taken while recodifying to remove repetitious language and to adopt the use of abbreviations and symbols throughout the regulations. The resulting document should be more readable and useful to the public.



California

SARDINES AND MACKEREL TRUCKED FROM SOUTH TO NORTH CALIFORNIA FOR CANNING: Since the disappearance of sardines in Northern California during the last decade, processors of sardines in Monterey and San Francisco have had to depend on sardines transported to their plants by truck from Southern California ports. At several points facilities have been installed for loading sardines onto trucks for transport to the plants. The principal port where these facilities are available is Port Hueneme, which is 70 miles north of Los Angeles. At Port Hueneme there is a good harbor, with excellent unloading facilities. Additional ports are Morro Bay, Avila, and Santa Barbara.

The vessels unload directly into a hopper, either by means of a suction pump or the old-style winch-operated brailer. From the hopper the fish are carried on a conveyor to a chute, and then dropped into a truck. The trucks are various types of flatbed semi or double truck-trailers. On the flatbed, watertight rectangular tanks, open at the top, are installed. These tanks are of various sizes, mostly rectangular, capable of carrying between 18 and 22 tons of fish. The open tops are covered, when on the road, by canvas tarpaulins which are lashed down to cleats on

the flatbed. At the rear of the tank is an opening over which a metal plate is bolted to the tank. This plate is removed when the truck is being unloaded, and the fish are washed out of the opening onto a flume which leads into the cannery. The openings at the top of the tank is such that it permits the truck to move back and forth and be properly loaded with fish and crushed ice.

At present, the only southern California port out of which sardines, mackerel, or anchovies are being trucked to northern California is Port Hueneme, and between 50-70 trucks are available on a standby basis. Most of the trucks are independent contractors, working for brokers, who contract for the hauls. There is no open bidding by the brokers; their ability to provide good service is the controlling factor. At present three brokers are operating. The trucks that haul the fish also engage in the fruit and vegetable harvest in the area, and the fish hauls provide a very good off-season business. A few haulers work year-around, but the greater part of the trucks only operate during the sardine season, from September 1 through December 31. Minimum hauling rates are set by the Public Utilities Commission, and the rates paid are generally at, or near, this minimum. The haul from Port Hueneme to Monterey



FIG. 1 - SUCTION PUMP HOOK-UP UNLOADING SARDINES FROM VESSEL TO CONVEYOR BELT AT PORT HUENEME.



FIG. 2 - END OF CONVEYOR FROM VESSEL TO TRUCK. FISH POURING INTO TANK ON TRUCK.

is a distance of approximately 300 miles, and to San Francisco approximately 360 miles. To the basic trucking rates are added charges for use of unloading conveyors, harbor department rates for use of the dock, and cost of ice. In some instances truckers absorb the costs of some items, in others canners do. The Fishermen's Union has contracts with vessel owners, who in turn have contracts with canners, for flat rates to either Monterey or San Francisco. For fish bought by canners this charge is deducted from the gross return to the vessel. The canner pays the truck broker for transporting the fish, and the other charges are split up in any manner that can be negotiated between the canner and truck broker.



FIG. 3 - A TRUCKLOAD OF JACK MACKEREL--ABOUT 18 TONS. CRUSHED ICE IS BLOWN ACROSS THE TOP OF THE FISH.

As sardine landings are irregular as to time of the day they are unloaded, due to distance from port, moonphase, weather, etc., the trucks are on a standby basis.

Round-trip driving and unloading time to Monterey averages 17-19 hours, to San Francisco 21-23 hours. For a great part of the run the trucks travel through the Salinas Valley, where daytime temperatures in September and October average around 90° F., and if the trip is during the daylight hours at least 2 tons of crushed ice are carried. If it is a night trip about 1 ton of ice is used. One of the cannerys also requires salt, using 200 to 400 one-pound sacks per load. When loading, ice is blown along the base of the truck about 2-4 inches thick, the fish are then loaded in the tank for a depth of about three feet, more ice is blown on top of the fish, the canvas is lashed on, and the truck is ready to roll. The fish arrive at the cannery in excellent condition, and there is very little loss due to the long trip by truck.



FIG. 4 - TYPICAL TRUCK WITH CANVAS LASHED IN PLACE ON TOP OF TANK. TRUCK BEING WEIGHED. WEIGHING OF TRUCK TAKES PLACE BEFORE AND AFTER ICE IS ADDED.

During the 1957 sardine season 10,377 tons of sardines and 5,586 tons of mackerel were transported by truck to Monterey and San Francisco, and if fish had been available the quantity would certainly have been higher.

This trucking operation, which represents a 25-percent deduction from the sardine ex-vessel price to the vessel-owner and crews, has nevertheless enabled the Monterey cannerys and vessel owners to survive. It has made little difference to the cannerys since the price they pay for the fish is competitive with that paid by San Pedro packers. The vessel owners and crew members although operating out of Port Hueneme, although bearing most of the cost of trucking, make out as well as those operating out of Southern California ports because they handle a larger volume. The greatest benefit, however, is probably derived from the fact that the trucking of fish has permitted a few Monterey and San Francisco cannerys to survive, where they would have otherwise gone out of business because of lack of fish. This is especially important in the event sardines return to California waters in their former abundance as then all available will be needed to process the harvest.



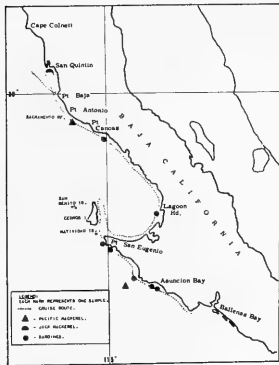
FIG. 5 - A TYPICAL CONVEYOR OR FLUME USED TO CARRY FISH FROM TRUCKS TO CANNERY.

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SURVEY OF PELAGIC FISH POPULATIONS BETWEEN CENTRAL AND BAJA CALIFORNIA BY M/V "N. B. Scofield," Cruise 57-S-3, September 16-October 4, 1957: The coastal waters off Baja California, Mexico, from Ballenas Bay to San Quintin Bay were surveyed by the California Department of Fish and Game Research vessel N. B. Scofield.

The objectives were: (1) To assess the relative abundance of Pacific sardines, Pacific mackerel



M/V N. B. SCOFIELD, CRUISE 57-S-3 (SEPTEMBER 16 TO OCTOBER 4, 1957).

A total of 51 light stations were occupied, of which 42 were negative. Of the 9 positive stations, 6 yielded sardines, 1 sardine and Pacific mackerel, 1 Pacific mackerel, and 1 jack mackerel. At many of the stations weather conditions were such that the blanket net could not be used. The sardines in the 7 samples taken ranged in standard length from 32 to 227 mm. (1.3 to 9.1 inches).

Table 1 - List of the Species Captured or Observed at the Light Stations during Cruise 57-S-3

Species	Number of Stations
No fish under light	27
Sardines	17
Pacific mackerel	6
Anchovy	3
Jack mackerel	1
Bonito	1
Barracuda	1
Flying fish	1
Squid	1

Sardines appeared to be particularly abundant in the area from Point San Eugenia to Ballenas Bay; they were also abundant in the area between Lagoon Head and Canoas Point. Although schools were not sighted nor recorded on the fathometer, these fish appeared to be evenly distributed over the entire area. Weather conditions became too extreme for sampling north of Canoas Point, but some traces of schools were observed on the fathometer in the San Quintin Bay area.

Table 2 - Results of Fishing During the Day During Cruise 57-S-3

Species	Number of Stations
Black sea bass	3
Sand bass	1
Kelp bass	1
Yellowtail	1
Ocean whitefish	1

It appears that the distribution of sardines below Point San Eugenia was similar to that found during the 1956 survey. However, a striking difference was noted in the dispersed behavior of the sardine schools

and jack mackerel with the aid of a 1,500-watt light and the blanket net. (2) To collect study specimens of California black sea bass, *Stereolepis gigas*. (3) To tag miscellaneous specimens with a new type dart tag and to retain the tagged specimens alive for observations. (4) To acquaint newly assigned personnel with the techniques and various problems of a blanket net-night light survey.

during the 1957 survey. In no instance was a trace on the fathometer recorded before turning on the night light. Then, if sardines were around traces would begin to show on the fathometer a few minutes after the light was turned on--indicating that sardines were beginning to accumulate under the light and vessel.

The N. B. Scofield traveled 360 nautical miles scouting fish, during which 8 fish schools of unknown species were observed.

Surface water temperatures, bathythermograph casts, and reversing thermometer casts were taken at all stations. Surface water temperatures in the surveyed area ranged from 17.3° C. (63.1° F.) at San Quintin to 21.8° C. (71.2° F.) at Point Santo Domingo. Sardines taken at the light stations were in waters of 18.5° C. (65.3° F.) minimum to 21.8° C. (71.2° F.) maximum.

Twelve California black sea bass, *Stereolepis gigas*, were brought back for study purposes. A number of yellowtail, *Seriola dorsalis*, sand bass, *Paralabrax nebulifer*, and kelp bass, *Paralabrax clathratus*, were tagged with a new experimental dart tag and transferred from the tanks of the N. B. Scofield to an aquarium for further observation.

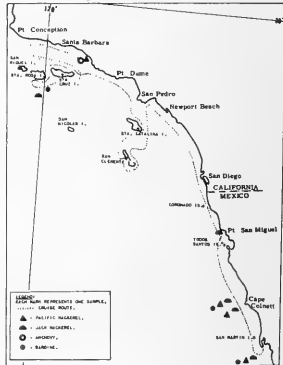
Cruise 57-S-4, October 14-November 2, 1957:

The coastal waters from San Quintin, Baja California, to Point Conception, Calif., including portions of areas around San Clemente, Santa Catalina, Anacapa, Santa Cruz, San Rosa, and San Miguel Islands were surveyed. The objectives were:

(1) To census the populations of sardines, jack mackerel, Pacific mackerel, northern anchovy. (2) To obtain adult sardines for serological work being conducted by the U. S. Bureau of Commercial Fisheries. (3) To collect specimens for laboratory study.

Observations and other data included 71 light stations, of which 63 were

negative. Of the 7 positive stations, 3 yielded sardines, 5 Pacific mackerel, 5 jack mackerel, and 1 northern anchovy. One station yielded only sardines while another yielded only jack mackerel. The other 5 stations were a mixture of fish. All the sardines from the first successful station were transported to San Diego and transferred to the holding tanks used by the Bureau of Commercial Fisheries for their serological work. Sardines in the other two samples ranged in length from 136 to 158 mm. standard length (5.3 to 6.2 inches). Throughout the area surveyed, sardines appeared



M/V N. B. SCOFIELD CRUISE 57-S-4 (OCTOBER 14-NOVEMBER 2, 1957).

most abundant in the area from Point Dume to Santa Barbara and around the northern Channel Islands. A moderate concentration of sardines was observed in the San Quintin region in northern Baja California. Northern anchovies, jack mackerel, and Pacific mackerel were observed in greatest abundance in the Point Dume to Port Huememe area and around the Channel Islands. Jack mackerel were very evident around all the islands. More schools of all species of fish were observed north of the California-Mexico border than between the border and San Quintin.

The N. B. Scofield scouted a total of 548 miles and sighted 444 fish schools. Of the schools sighted, it was determined that 16 contained sardines,

Table 3 - List of the Species Captured or Observed at the Night Light Stations During Cruise 57-S-4

Species	Number of Stations
No fish under the light	31
Pacific mackerel	12
Squid	12
Sauries	10
Sardine	9
Anchovy	8
Jack mackerel	8
Smelt (Atherinidae)	4
Mola	2
Bonito	2
Halfmoon	2

20 anchovies, and 30 mackerel, while 114 probably contained anchovies or sardines or a mixture of the two, and 260 were of undetermined contents. In addition, 4 schools of bonito were sighted in the Santa Monica Bay area. Sauries were very prominent around the islands. In some areas a thin layer of saurries would be visible on either side of the vessel for 10 or 12 miles along the vessel's course.

Surface water temperatures, bathythermograph casts, and reversing thermometer casts were taken at all stations. Surface temperatures throughout the cruise ranged from a minimum of 15.9° C. (60.6° F.) at Smugglers Cove, Santa Cruz Island, to a maximum of 19.3° C. (66.7° F.) at Abalone Point near Laguna Beach. Sardines taken at the night light stations were in waters of 16.5° C. (61.7° F.) minimum to a maximum of 18.4° C. (66.1° F.).

Cruise 57-S-5, November 9-November 23, 1957:

The third in this series of cruises was made to the waters off central California from Point Reyes south to Point Conception. The objectives were:

- (1) To assess the relative abundance of sardines, Pacific mackerel, jack mackerel, and anchovies using 1,500-watt light above the surface of the water and a blanket net as the standard sampling tool.
- (2) To fish with a lampara net on schools of fish observed from the air in an effort to assist the aerial observers in identifying schools of fish and to explore the technique as a possible sampling method.
- (3) To deliver live sardines to Steinhart Aquarium, San Francisco.

The occurrence of young sardines in Monterey Bay was one of the most significant facts observed during this cruise, the last of the 1957 survey cruises. This was the first indication of sardines less than a year old in the waters north of Point Buchon since the current series of pelagic fish surveys began in 1949. The finding and collection of these fish, size range 99 to 230 mm. (3.9 to 9.1 inches), was

consistent with and amplified reports received earlier in the year; eggs and larvae had been reported by the Hopkins Marine Station personnel and in mid-summer commercial fishermen reported small sardines mixed with anchovies, while mixed schools were sighted on several occasions during aerial surveys by Department of Fish and Game personnel.

A small sample of adult sardines was also taken in San Luis Obispo Bay along with a mixed school of fish, composed predominantly of jack smelt, a few mackerel and anchovies.

This is the first year in recent history in which Pacific mackerel were taken in waters north of Point Conception. However, the one sample of 2 fish, collected in San Simeon Bay, does not indicate a great abundance of Pacific mackerel in waters off Central California.

Twenty-six one-hour night light stations were occupied in the survey area. Pelagic fish species were taken in three general localities, principally in bays; Monterey, San Simeon, and San Luis Obispo. The remainder of the stations (23) were either blank or contained such species as jack smelt, saurries, or squid.

A major portion of the 240 miles scouted between stations appeared blank. A few unknown schools of



fish were sighted in the vicinity of Point Arguello and Cape San Martin. Schools of very small anchovies, no more than several weeks old, were observed in San Simeon Bay and off Point Sal.

A fairly heavy concentration of large jellyfish, *Chrysaerora gilberti*, was observed on two adjacent stations in the area between the town of Santa Cruz and Ano Nuevo Point to the northwest.

The area of concentration appeared to cover a 10- to 15-mile stretch of coastal water, which is in sharp contrast to the aerial observations of a weak previous and to last year's findings when a very heavy and more extensive (50- to 60-mile) concentration was noted. Also, pointing up the marked changes found this year over last was the absence of tunicates and salps, none was seen in 1957, whereas during the November 1956 survey large concentrations of *Pyrosoma* and salps were frequently seen along the route.

The surface water temperature ranged from 12.8° C. (50.0° F.) off Point Sur to 15.2° C. (59.4° F.) just south of Point Arguello. However, the major portion of the surveyed water mass was relatively uniform, varying only 0.8° C. (range 13.0° to 13.8° C.). There was nothing unusual about the water temperatures

where sardines were found and taken, Monterey Bay registered 14.3° C. and San Luis Obispo 13.1° C. Station routine included bathythermograph casts to allowable depths and 10-meter reversing thermometer casts.

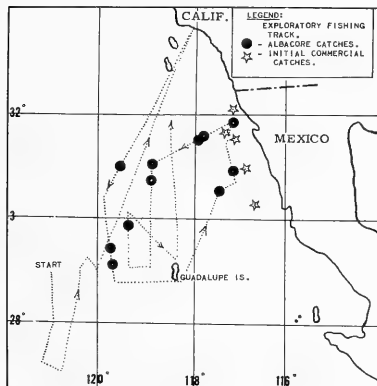
Aerial Scouting--Lampara Net Fishing: Working in San Luis Obispo Bay, five sets of a 100-fathom lampara net were made during daylight hours under the direction of an observer flying in the State Cessna 170. Four sets were made around schools of fish visible from the air but not from the boats. These schools were traced on a small recording fathometer prior to setting the net in an attempt to measure their mass. In each instance,

the school was seen to escape the net despite the fact that it was completely surrounded. Each haul yielded only a scoop or two of fish; the shallow water set contained primarily anchovies and white croakers, while the deep water sets caught jack smelt and sardines. Because the schools of fish were seen to escape the net, it was felt that the catch was of scattered fish and not a portion of the school. Therefore the last set was deliberately made on a blank area; no school of fish was visible from the air and no traces were obtained on the fathometer. The resulting catch of this set was one large jack smelt. Thus, it appeared that the first 4 hauls did catch a portion of the encircled school.

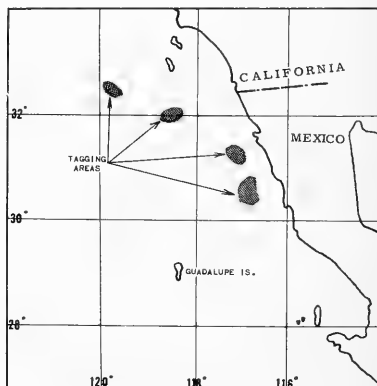
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PRESEASON EXPLORATORY ALBACORE SURVEY (M/V N. B. Scofield)

Cruise 57-S-2): An exploratory survey to determine the pre-season occurrence of albacore and to delineate the migration route taken by albacore tuna as they approach the west coast of Lower California was made by the California Department of Fish and Game's research vessel N. B. Scofield from June 3-July 15, 1957. Other objectives of the cruise were: (1) to obtain oceanographic and biological data that may be related to the occurrence of albacore; (2) locate and report banks and seamounts within the survey area; and (3) tag albacore as a part of the population, growth, and migration study.



M/V N.B. SCOFIELD CRUISE 57-S-2 (JUNE 3-JULY 14, 1957) PRESEASON EXPLORATORY ALBACORE SCOUTING.



M/V N.B. SCOFIELD CRUISE 57-S-2 (JUNE 3-JULY 14, 1957) ALBACORE TAGGING AREAS.

Surface trolling with commercial gear was conducted during daylight hours in the survey area. Sets of 20 baskets each of Japanese type long-line gear were made in the survey area where conditions appeared favorable for albacore. Fishing with live bait and trolling gear was conducted in the inshore areas.

All viable albacore were tagged and released. All remaining were preserved for shoreside examination in an attempt to discover physical evidence of recent prolonged migration. The location of albacore and other incidental catches were recorded. Locations of reported commercial catches were recorded. Marine life sightings were noted. Night light stations were occupied. Routine observations (size range of fish, stomach regurgitations, etc.) were recorded.

Surface sea temperatures were recorded every two hours while the vessel was under way. Bathythermograph casts were made at each long-line station and at various positions along the vessel's track. Daily weather observations were recorded. The vessel's 6,000-fathom recording fathometer was operated continuously while under way. Reported shoal areas within the survey area were investigated for validity.

Table 1 - Albacore Troll Catch

June 1957	Latitude	Longitude	No.	Water Temp. (Fahrenheit)
9	29° 30' N.	119° 55' W.	4	64.8°
12	31° 00' N.	119° 38' W.	2	63.5°
13	29° 39' N.	119° 50' W.	2	63.7°
13	29° 17' N.	119° 46' W.	2	63.7°
15	30° 37' N.	117° 13' W.	1	62.6°
15	30° 40' N.	116° 54' W.	1	62.6°
15	30° 51' N.	116° 58' W.	3	62.6°
16	31° 49' N.	117° 13' W.	5	64.8°
17	31° 29' N.	117° 56' W.	7	63.3°
17	31° 01' N.	118° 51' W.	1	63.3°
17	30° 50' N.	118° 52' W.	1	63.3°
19	29° 58' N.	119° 28' W.	1	65.5°
22	31° 08' N.	118° 18' W.	1	63.7°
22	31° 19' N.	118° 19' W.	3	63.7°
22	31° 36' N.	118° 30' W.	14	63.7°

Fishing Activities from June 3 to June 22 yielded a total of 48 albacore captured on trolling gear. Long line failed to produce any albacore.

A total of 27 albacore was tagged with both "G"-type "spaghetti" tags and experimental dart-tag. Weights of the albacore taken ranged from 11½ to 20 pounds. There was no apparent physical evidence of recent prolonged migration. Stomach analysis revealed that all were empty or contained only digested material with the exception of one stomach which contained red crabs (*Pleuroncodes planipes*).

Marine life sightings were sparse during this part of the cruise. Albatross were the most numerous of the birds sighted. The offshore tracks covered by the vessel were especially devoid of marine life, while tracks

to the north and inshore revealed a variety of marine life. Storm petrels, flying fish, seals, and porpoise were observed in these areas. Albacore "jumpers" were observed June 16, at lat. 31°49' N., long. 117°13' W. and on June 17, at lat. 31°29' N., long. 117°56' W. The predominate species obtained from night-lighting activities were Pacific saury (*Cololabis saira*) and lanternfish.

Surface sea temperatures in the survey area ranged from 15.9° C. (60.6° F.) to 19.4° C. (66.9° F.). Bathythermograph casts indicated shallow thermoclines in inshore areas and deeper thermoclines for offshore areas. The best catches of albacore occurred in the inshore areas. Investigation of reported shoal areas failed to confirm these reports.

During the tagging phase June 26-July 14, live-bait fishing produced good catches of albacore in the area located between San Martin and Todos Santos Island, Lower California, and 35 to 50 miles offshore. Trolling catches were heaviest between the Sixtymile Bank and the Dumping Grounds. A few fish were taken while trolling 60 to 65 miles southwest of San Nicolas Island. A total of 761 albacore was captured during this part of the cruise.

A total of 604 albacore was tagged and released. Of this total, 58 were double-tagged with type "G" "spaghetti" tags and experimental dart tags. The remainder were tagged with "spaghetti" tags only. Stomachs of injured fish contained Pacific saury, red crabs, and squid remains. The majority of the stomachs examined were empty. Large fish, up to 41 pounds, were encountered from San Martin Island to Todos Santos Islands. These fish were schooled thickly and reacted well to live bait fishing. Trolling in this area was relatively unproductive as compared to live-bait fishing.

Trolling was more productive in the vicinity of the Sixtymile Bank and the area southwest of San Nicolas Island. The catch in these areas was composed of small fish, usually less than 20 pounds. Marine life sightings consisted mainly of storm petrels, small unidentified white birds, and albacore "jumpers." Porpoise were observed throughout this part of the cruise. "Nightlighting" produced Pacific saury, flyingfish, and squid.

Surface sea temperatures in the fishing areas ranged from 16.7° C. to 21.0° C. (61°-69.8° F.). Optimum catches occurred in temperatures ranging from 18.0° to 19.4° C. (64.4°-66.4° F.). Bathythermograph casts indicated shallow thermoclines in the areas fished.



Cans--Shipments for Fishery Products, January 1958



Total shipments of metal cans during January 1958 amounted to 5,841 short tons of steel (based on the amount of steel consumed in the manufacture of cans) as compared with 6,947¹/₂ tons in the same month a year ago. Canning of fishery products in January this year was confined largely to tuna, jack and Pacific mackerel, and Gulf oysters.

NOTE: STATISTICS COVER ALL COMMERCIAL AND CAPTIVE PLANTS KNOWN TO BE PRODUCING METAL CANS. REPORTED IN BASE BOXES OF STEEL CONSUMED IN THE MANUFACTURE OF CANS, THE DATA FOR FISHERY PRODUCTS ARE CONVERTED TO TONS OF STEEL BY USING THE FACTOR: 23.0 BASE BOXES OF STEEL EQUAL ONE SHORT TON OF STEEL.
1/REVISED.

CORRECTION

In the article "Cans--Shipments for Fishery Products, 1957" which appeared in the April 1958 (p. 24) issue of the Commercial Fisheries Review, the 1957 shipments of 144,560 short tons is incorrect. The total should read 114,560 short tons.



Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, JANUARY-FEBRUARY 1958:
Fresh and Frozen Fishery Products: A total of 1.6 million pounds (value \$1.0 million) of fresh and frozen fishery products were purchased in February by the Military Subsistence Market Centers for the use of the Armed Forces under the Department of Defense. The quantity of these purchases were lower than those in January by 3.4 percent and below those in February 1957 by 2.4 percent. The value of the purchases this February was 6.2 percent higher than in the previous month and 23.9 percent greater than in the same month a year ago.

Table 1 - Fresh and Frozen Fishery Products Purchased by Military Subsistence Market Centers, February 1958 with Comparisons

QUANTITY				VALUE			
February		Jan.-Feb.		February		Jan.-Feb.	
1958	1957	1958	1957	1958	1957	1958	1957
..... (1,000 lbs.) (\$1,000)			
1,634	1,678	3,326	3,890	1,001	808	1,944	1,977

For the first two months of 1958 purchases totaled 3.3 million pounds, valued at \$1.9 million--a decrease of 14.5 percent in quantity and 1.7 percent in value as compared with the same period of 1957.

Prices paid for fresh and frozen fishery products by the Department of Defense in February averaged 61.3 cents a pound--the highest since January 1956 when the average reached 68.7 cents a pound. The average price for February was 5.6 cents a pound more than the previous month and 13.1 cents a pound more than in the same month in 1957. Short supplies of frozen fillets and some other frozen fishery products caused prices in February to rise to the highest they have been for several years.

Canned Fishery Products: Sardines was the only canned fishery product purchased for the use of the Armed Forces during February.

Table 2 - Canned Fishery Products Purchased by Military Subsistence Market Centers, February 1958 with Comparisons

Species	QUANTITY				VALUE	
	February		Jan.-Feb.		February	Jan.-Feb.
	1958	1957	1958	1957	1958	1958
	... (1,000 Lbs.) (\$1,000) ...	
Tuna	-	268	316	268	-	164
Salmon	-	-	695	992	-	378
Sardines	3	1	21	11	1	7

* * * * *

VETERANS ADMINISTRATION TO BUY CANNED FOODS FROM HINES, ILL., DEPOT: The Veterans Administration started to buy canned foods from its supply depot at Hines, Ill., instead of from Washington, D. C., beginning April 7.

Thereafter the new office at the Hines depot will issue all invitations for bids and will make awards on all of the VA's subsistence requirements, except frozen foods, which will be bought from the Washington office.

The VA's Washington office, which set up the agency's postwar buying program and also handled the contracting, will continue to fix policy and general buying procedures.

The Hines depot is located 12 miles west of Chicago and is addressed: Marketing Division for Subsistence Veterans Administration Supply Depot, P. O. Box 27, Hines, Ill.

* * * * *

VETERANS ADMINISTRATION REQUIREMENTS FOR CANNED FISH FROM 1958 PACK: Recently the Veterans Administration issued its estimated requirements for canned fruits, vegetables, and fish to be procured from the 1958 pack. Its requirements for canned fish are:

Salmon, red or sockeye	Can Size #1	Dozen Cans 25,260
Salmon, red or sockeye--sodium content restricted to not more than 60 mg. per 100 grams	# $\frac{1}{2}$	4,760
Tuna, light meat, chunk style in vegetable oil	4-lb.	5,820
Tuna, light meat, chunk style--sodium content restricted to not more than 50 mg. per 100 grams.	# $\frac{1}{2}$	8,500



Great Lakes Fishery Investigations

OPERATIONAL PLANS FOR M/V CISCO FOR 1958: During the 1958 season, the U. S. Bureau of Commercial Fisheries research vessel Cisco will again be assigned to operate on Lake Erie. The vessel will participate in a cooperative research program developed jointly by the states bordering Lake Erie, the province of Ontario, and the Bureau.

The Cisco was scheduled to depart from Bay City for Lake Erie on March 24.

Some work with the vessel may be continued after Cruise 11 to fill special requirements. The operation of the Cisco during the 1958 season will, for the most part, be confined to that part of Lake Erie lying west of Pelee Point, Ontario, and Lorain, Ohio.

Major objective of the work by the Cisco during 1958 will be to help gather as much information as possible concerning the life history of 15 important species of fish in western Lake Erie. Special emphasis will be on spawning habits, egg survival, hatching, fry survival, and early life history.

Operational Two-Week Schedule of M/V Cisco, 1958

Cruise	Period
1	March 25-April 8
2	April 15-29
3	May 6-20
4	May 27-June 10
5	June 17-July 1
6	July 8-22
7	July 29-August 12
8	August 19-September 2
9	September 9-23
10	September 30-October 14
11	October 21-November 4

Approximately half of each cruise will be spent in trawling at a number of locations scattered over the entire western end of Lake Erie. Information and experience gained during the 1957 operation of the Cisco will be extremely valuable in this portion of the 1958 work. Length, weight, stomachs, and scale samples for age determination will be taken from fish samples.

The remainder of each cruise will be devoted to collection of detailed information on the spawning habits, survival and growth of the larvae and fry, horizontal and vertical distribution, movements, and food habits of each species. Most of this work will require small nets with fine mesh to be towed at various levels. Electricity will be used in connection with some of these tow nets and a small beam trawl with chafing gear will be fished on rough bottom.

Three times during the operating season the Cisco will join with a number of other vessels from Ontario and the State of Ohio and the Bureau's research vessel Musky in a synoptic survey of western Lake Erie. This operation is designed to produce, largely by means of chemical analysis of water samples, information concerning the currents and movements of water masses in western Lake Erie. During these surveys each of the participating vessels will run predetermined courses on three consecutive days. Water samples will be taken at close intervals by each vessel during each of three days. For comparison with the chemical-analysis method of current determination, several drift bottles will also be released at each point water samples are taken.

A certain amount of flexibility in the Cisco schedule has been provided to allow for work on other problems that may arise.

Some use will be made of gill nets set obliquely and horizontally at various depths to collect larger members of certain species of fish and to determine their vertical distribution.



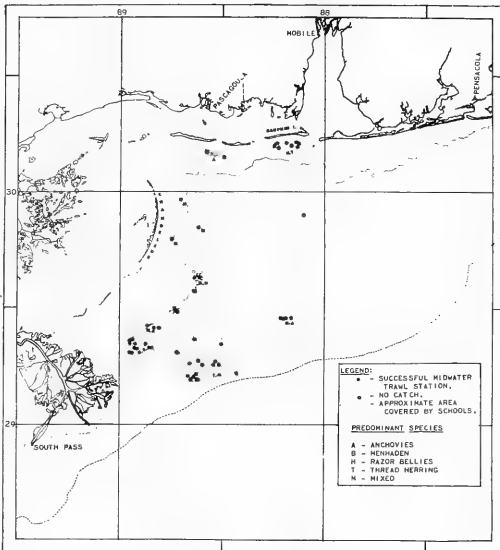
Gulf Exploratory Fishery Program

EXPERIMENTAL MIDWATER TRAWLING CONDUCTED OFF MISSISSIPPI DELTA (M/V Oregon Cruise 48): Midwater trawling between the Mississippi Delta and Cape San Blas was conducted by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Oregon January 27-March 14, 1958. The objectives of the cruise were to count, sample, and identify midwater schools in that area, and to test midwater trawls of varying mesh sizes.

A total of 52 midwater-trawl sets (see chart) were made on depth-recorder indications of midwater schools. Catches of 10 to 1,369 pounds were obtained in 36 tows, and indicated concentrations of many species of herringlike species. Eighteen of the schools sampled were predominantly razor bellies (*Harengula pensacolae*) and nine were 5- to 6-inch anchovies (*Anchoa hepsetus*). Scattered schools sampled contained mixtures of thread herring, chub mackerel, round herring, anchovies, scad, gizzard shad, and alewives. Menhaden (*Brevoortia patronus*) made up the bulk of the catch in two drags off Pass-a-Loutre. One drag (January 30, 1958) contained 1,290 pounds of menhaden in ripe spawning condition.

Two 40-foot square midwater trawls with mesh sizes tapering from 3" to 1 $\frac{1}{4}$ " and 2" to 1 $\frac{1}{4}$ " were used for school sampling. A single set on three dense school indications with an 88-foot nylon trawl resulted in the loss of all the netting.

Recorder indications of subsurface schools were numerous both preceding and following the cold wave during the middle of February. Schools were noticeably diminished during the cold wave.



M/V OREGON CRUISE 48 (JANUARY 27-MARCH 14, 1958).



Lobsters

METAL CONTAINER USED FOR SHIPPING LIVE LOBSTERS: The ingenuity of a Gloucester man for successfully developing a method of packing and shipping live lobsters in a large metal container won a citation from the Massachusetts Department of Commerce. For years attempts have been made to find a new way and more satisfactory methods of shipping lobsters. The customary ways of packing them for shipment is in wooden barrels, wooden boxes, or cartons.

Joseph Mellow, widely known Cape Ann dealer, was commended early this year for his achievement by the Commissioner of the Massachusetts Department of Commerce who said: "this is another in a long line of 'Firsts' for Massachusetts."

The old method used was to place the lobsters in a specially-constructed wooden barrel so that they could be iced on four sides and on top and bottom. It proved successful but there was always danger of the barrel being smashed in shipment. Then Mellow thought: "Why not try a galvanized barrel--the same kind used for trash?" He had the interior constructed the same as in the wooden barrels with the addition of a plastic lining and a special ring for the top so that the cover would be sealed tightly and nailed.

Mellow has shipped lobsters to every State in the Union and as far away as Guatemala and Honolulu. His nationwide customers were delighted with this innovation. Not only does it deliver their lobsters in absolute safety but after they are eaten, they are the possessors of a brand new trash can. Mellow says the difference in cost is practically negligible, a matter of only a few pennies more and he guarantees that the live lobsters will arrive at their destination as lively as the day they were packed, providing the shipping period is no longer than 4½ days. The lobsters will survive just as well and as long in the tightly sealed can as in wooden barrels or cartons. By using air-freight, deliveries to the Far West are made within a period of 24 hours. Up to now the container has been used for shipping directly to consumers rather than to dealers, according to reports.

* * * * *

WOOD SHAVINGS AS PACKING MATERIAL SHOWS PROMISE: Encouraging results have been obtained in the first of a long series of tests planned by research personnel of the Maine Department of Sea and Shore Fisheries on the use of wood shavings and other materials for the packing and shipping of lobsters.

"So far, the results are strictly tentative," says the Commissioner of the Department. "Far more extensive tests will have to be made before we can make specific recommendations to the industry."

Experimental packs and test shipments tried to date indicate that the use of dry softwood shavings in cardboard packing cases, as proposed recently by the president of the Belgian Shellfish Importers Association, may be an important new way of shipping lobsters considerable distances. Raoul Halewyck of Ostend, Belgium, demonstrated the practicality of this method to a group of Maine lobster dealers at Rockland recently.

At the Department's McKown Point research station, Boothbay Harbor, marine biologists have kicked off their investigation by putting various lobster packs through tests under three separate conditions. The Director of Research said that containers had been shipped by truck to New York City and back, while a second group was kept at the laboratory at room temperatures, and a third group was subjected to high temperatures in an incubator.

Packages used included discarded liquor cartons, special cartons designed for a Maine lobster dealer, and the conventional barrel in which lobsters are packed in rockweed and surrounded by ice.

The first test shipment consisted of five containers, each with 10 pounds of live lobsters. One liquor carton had wood shavings and no ice. A second liquor carton had shavings and ice. The special cartons were also packed with and without ice, and the barrel had its usual quota of rockweed and ice.

When the test shipment was returned to the laboratory, the lobsters had been in their various containers for 68 hours. An immediate check disclosed the following:

The liquor carton with shavings and no ice had seven lobsters in good condition. Two appeared dead and two were weak. The liquor carton with ice had seven lobsters in good condition. Four near the top, which had been shaken out of the shavings, appeared lifeless--98 percent of the ice still remained, suggesting that the method of packing had insulated the ice even more effectively than the lobsters.

On this point, one of the Department's research staff at work on this project said that initial tests had proved the

importance of proper packing. "While the container and the packing materials are key factors, the way in which the materials are used can make a considerable difference in the survival rate."

The special cartons gave quite favorable results, biologists found. One packed with wood shavings but without ice had ten lobsters in good condition, and only one which appeared lifeless. The shavings had settled about six inches in the box. The same container with ice packed in polyethylene bags had nine lobsters in good condition, and two which were weak. Both had thrown their crusher claws. Again, about 98 percent of the ice remained.

In the standard barrel, which had been subjected to the same conditions as the cartons, seven lobsters were in good condition, while four appeared lifeless--three on bottom of the pack and one in the middle.

Much closer checks are being kept on the containers which remain at the laboratory. As pointed out, shipping tests give a picture of how lobsters will survive under actual conditions. But there is no way of knowing what has been happening to the packages in transit, the temperature ranges to which they have been subjected, not how they have been handled.

The containers tested in the laboratory, on the other hand, are under constant observation. Hourly temperature checks are made with an instrument called a potentiometer. Each box or barrel is wired and thermocouple units are placed inside when it is packed. Thus technicians are able to record the exact temperatures inside each container as well as those of the surrounding atmosphere.

Groups of containers have been tested at room temperatures ranging from 52 to 66degrees. One group tested out slightly better than the containers sent in the test shipment. One hundred percent survived in good condition in the special carton packed with shavings and ice, while the conventional barrel pack had seven in good condition, and four which appeared lifeless.

Perhaps the most rugged test so far conducted was given a series of containers placed in an incubator at temperatures ranging from 95 to 101 degrees. Preliminary findings were too limited to be conclusive. Biologists did find, however, that under these conditions containers needed ice in order for the lobsters to survive 20 or more hours.

Once temperatures inside the containers started to climb, the lobsters were likely to die quickly. Thus,

while the wood shavings are excellent insulation, once the heat begins to get through to the lobsters, their minutes of life are numbered. Ice slows down this process. In one wooden fish box, for example, using wood shavings and ice, survival was 100 percent after over 30 hours of high temperatures. The box was removed just as the interior temperatures began to climb.

As a result of the knowledge gained in these preliminary tests, additional research will be conducted on

various types of containers and insulating materials. Additional test shipments will be made regularly. All legal sizes of lobsters will be used in the experiments.

A nationally-known paper box manufacturer has agreed to make information available to the Department on its most recent container research. Sample boxes will be supplied the Department which, the firm believes, will be suitable for lobster shipping. (Maine Coast Fisherman, January 1958.)



Maine

MARKET OUTLOOK FOR CANNED SARDINES IMPROVES: A major increase in Maine sardine sales at the consumer level during the past three months, and a sizable gain for the eight-month period, June 1957 through January 1958, was reported by Maine Sardine Council on March 20, 1958. The sales data regularly collected by the Council's market research services showed the gains to run 20 percent and 14 percent, respectively, over the same periods a year ago.

The increases represent many, many thousands of cases and has helped to bring the industry's inventory position down to a very favorable level, the Council's Executive Secretary stated. He also said that movement of stocks from packers' hands during January and February 1958 was the largest for a like period since the Council started keeping records six years ago and totaled nearly 500,000 cases.

Although the Council has no definite explanation of this increased business activity, it could involve a number of factors such as greater demand for low cost, high protein foods during a period of recession, the high price of meats, improved quality, more meals being eaten at home, and the Council's promotional programs.

The Council stated that imported sardine sales remained about the same during the eight-month period while California sardines showed a huge loss due to a short pack.

From an inventory standpoint the Maine sardine industry should be in a very good position by the start of the 1958 packing season, the Council reported.



Market Development

INITIAL STEPS TAKEN IN PLAN FOR NEW ENGLAND FISHERIES: Initial steps to help the New England groundfish industry establish a comprehensive market development plan have been taken by the U. S. Bureau of Commercial Fisheries.

The objective of this initial program is to determine those fields in which the industry's sales promotion efforts can best be directed. This phase of the program is being conducted through a contract awarded to a New York City firm. The study is financed from funds provided by the Saltonstall-Kennedy Act of 1954 for the betterment of the domestic fishing industry. This organization will point up problem areas in the field of marketing the cod, haddock, ocean perch, and other groundfish produced by the New England industry. A general plan of approach was included in the report submitted to the Bureau by April 1, 1958.

The Bureau in turn will submit the findings to the New England Committee for the Aid of the Groundfish Industry for industry consideration and action.

The Bureau of Commercial Fisheries has already completed or has under way several studies on the New England fisherman's production and processing problems.



Marketing

EDIBLE FISHERY PRODUCTS MARKETING PROSPECTS FIRST HALF 1958: United States civilian consumption of fishery products per person through early spring this year was expected to be about the same as a year earlier. Total supplies were a little larger than in early 1957 because of somewhat heavier stocks of canned items. Retail prices of fishery products during the first quarter of 1958 were predicted to average somewhat above the year-earlier record level, with increases likely to be greatest for the fresh and frozen items.

Civilians had almost as much fishery products per person in 1957 as in 1956. There was a slight reduction in the quantity of canned products consumed, but the rate for the fresh and frozen and the cured items remained about unchanged. Retail prices of fishery products in 1957 averaged above those in the preceding year and were at a record high.

The total commercial catch of edible fish and shellfish in 1957 was about 5 percent smaller than a year earlier. The reduction was least for the species marketed mainly as fresh or frozen products and greatest for those used primarily in canning. To some extent the latter was reflected in a reduced pack of canned fishery products in 1957. The output of canned tuna was almost equal to the record volume packed in 1956, but this was a result of substantially increased use of imported frozen tuna. Commercial landings of tuna by the domestic fleet were much smaller than in 1956. The salmon pack was much smaller

in 1957, with the substantial reduction in Alaska only partly offset by the considerable increase in the Oregon and Washington packs. Production of Maine sardines was somewhat smaller than in 1956 and the pack of California sardines (pilchards) was the fourth smallest since 1921. The estimated heavier stocks of canned fishery products at the end of 1957 than a year earlier to some extent reflect the reported slower movement of supplies of some items into distribution channels than in the same part of the 1956-pack marketing season.

Commercial freezings of edible fish and shellfish in the continental United States (excluding Alaska) during 1957 were almost 4 percent smaller than in the preceding year. Stocks of frozen edible fishery products were more than 4 percent smaller at the end of 1957 than at the beginning.

Preliminary figures for 1957 indicated that imports of fresh and frozen fishery products were higher than in 1956 and those of the canned commodities were up noticeably. Exports of canned salmon were much larger in 1957, while those of sardines were down substantially.

This analysis appeared in a report prepared by the Agricultural Marketing Service, U. S. Department of Agriculture, in cooperation with the Bureau of Commercial Fisheries, U. S. Department of Interior, and published in the former agency's February 25, 1958, release of *The National Food Situation (NFS-83)*.



North Atlantic Fisheries Investigations

OBSERVATIONS ON HADDOCK MADE OFF HIGHLAND LIGHT (M/V Silver Mink): The Highland Grounds, located a few miles NNE. of Highland Light off Cape Cod, Mass., were surveyed for data on haddock by the M/V Silver Mink (under charter to the U. S. Bureau of Commercial Fisheries) during a one-day cruise on February 12, 1958.

Four otter-trawl tows were made with an otter trawl containing a 1½-inch mesh end liner in the cod end over a two by seven mile (east and west) course. The tows yielded 1,056 haddock which were measured for length. Additional data collected included scale samples from 265 male fish and 244 fish. From a sample containing 53 male and 53 female fish, round weights and gonad weights and state of development were recorded. The drumming muscle length and weight were also recorded. In addition, fin rays and stomach contents were collected and preserved for later analysis for this group of 106 fish. A total of 296 haddock were tagged and released during the cruise.

All species were identified and enumerated in one sample tow, and the important species were measured.

Haddock gonads were ripening but contained very few translucent fully mature eggs and probably will not be spawning on the Highland Ground until March. Pollock ovaries were fully ripe and in a running condition. Haddock preponderated in the catches followed by dabs and longhorn sculpin. The community appeared to be consistent in species composition and abundance within the area.

North Atlantic Herring Research

WINTER HABITAT AND LIFE HISTORY OF MAINE HERRING POPULATIONS STUDIED (M/V Delaware Cruise 57-9): Otter trawl tows for herring were made by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel M/V Delaware along the coast of Maine and on Georges Bank during this cruise. The cruise was planned to learn more of the winter habitat and general history of the common herring (*Clupea harengus*). There were three phases with periods at sea from December 12-22, 1957; January 6-17, 1958, and from January 27-February 6, 1958.

Small catches of sardine herring were made in Casco Bay, Sheepscot Bay, Penobscot Bay, Bluehill Bay, 3 miles northwest of Monhegan Island, and in the area south by east of Monhegan Island at distances of approximately 20-42 miles offshore. Larger mature herring were caught in Passamaquoddy Bay, on Georges Bank, on Fippennis Ledge, and in the area 15-33 miles south of Portland, Me.



FIG. 1 - THE SERVICE'S RESEARCH VESSEL DELAWARE.

The first tows were made in Passamaquoddy Bay using a $\frac{3}{4}$ -inch mesh No. 31 trawl and Danish herring trawls. Four tows were made along the Perry Shore; along the northwest shore of Deer Island near Western Passage, and at the center of Passamaquoddy Bay. A total of only 48 large herring of approximately 8 to 10 inches total length was taken in Passamaquoddy Bay, all of which were taken in the tows near the inside (northern) end of Western Passage. Rough and hard bottom prevented towing in other parts of Passamaquoddy Bay.

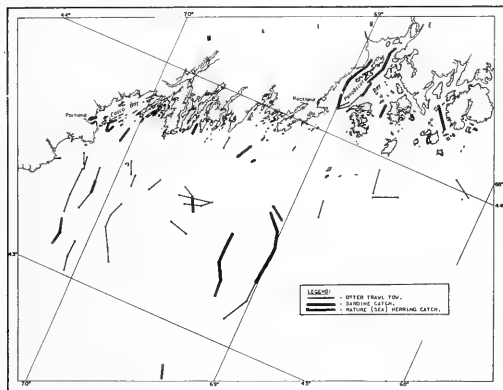


FIG. 2 - M/V DELAWARE CRUISE 57-9 (DECEMBER 12, 1957-FEBRUARY 6, 1958).

was done during this first phase of the cruise in the area between Cape Sable, Nova Scotia, and Georges Bank.

Thirteen tows were made on the northern edge of Georges Bank with a No. 41 trawl equipped with rollers and a small mesh cod end. Some herring were taken in nearly every tow, the largest catch being about 350 pounds and averaging 100 to 150 pounds per ton. These herring were large and mature, many showing evidence of having spawned and recovered.

Two days of plankton collection and oceanographic field work

During Phases 2 and 3 tows were made along the Gulf of Maine coast from Cape Ann, Mass., to Mt. Desert Rock, Me., ranging offshore to Jeffreys Ledge and to 40 miles south of Monhegan Island (see chart). Small catches (up to 75 pounds per tow) of 4- to 6-inch small herring, were made in Luckse Sound of Casco Bay; in East Penobscot and West Penobscot Bays; and in Bluehill Bay. Catches of from a few to 25 small herring measuring 5-6 inches in length were taken in several tows made in positions 12 to 36 miles south by east of Monhegan Island. Small catches of large (sea) herring were made on Fippennies Ledge and 6 miles east of Jeffreys Ledge. Samples of all catches were returned to Boothbay Harbor for biological studies of parasites and racial composition.

Areas of trawlable bottom are uncommon and hard to find along this coast and many inside locations were too restricted for operating a vessel the size of the Delaware. However, where suitable bottom was found, most of the inside tows and a good percentage of the outside tows yielded small quantities of herring. The indications are that many of the fish in their second year of life remain in inside areas or relatively near shore in the Gulf, not schooled, but scattered over a wide area. The fact that these fish were taken with bottom trawls is evidence that at least part of the herring populations remain near the bottom during this season. Larger herring, in their third year or older, were taken in Passamaquoddy Bay; in the "trough" between Jeffreys Ledge and the Mainland; on Fippennies Ledge; and on Georges Bank.

All catches made during this cruise were small and in most cases can be considered no more than "trace" catches. Nevertheless, these add considerably to the knowledge of the winter habitat of the sardine herring.



North Pacific Exploratory Fishery Program

SURVEY OF SHRIMP STOCKS OFF SOUTHERN WASHINGTON AND NORTHERN OREGON PLANNED (M/V John N. Cobb Cruise 36): Shrimp exploration off the coasts of southern Washington and northern Oregon were planned for the Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb from March 17 to April 11, 1958.



The explorations were to be conducted in cooperation with the State of Washington Department of Fisheries and the Fish Commission of Oregon. It was planned that biologists from these agencies were to accompany the vessel to collect shrimp samples and other data on the fishery.

The main objectives of this cruise were to gain additional knowledge concerning the distribution of shrimp and the commercial shrimp potential of the area centered off the mouth of the Columbia River, and to test the efficiency of

THE BUREAU OF COMMERCIAL FISHERIES EXPLORATORY FISHING VESSEL JOHN N. COBB.

various types and sizes of shrimp trawls. A 40-foot Gulf of Mexico flat-type shrimp trawl and two styles of larger Gulf semi-balloon trawls were to be used during the initial stage of the exploration.

Explorations for shrimp off the Washington coast were conducted by the Bureau in cooperation with the State of Washington Department of Fisheries during the fall of 1955 and spring of 1956. Major fishing effort during these cruises extended from Willapa Bay to Destruction Island at depths of 50 to 100 fathoms. During the 1956 cruise the John N. Cobb, using Gulf shrimp trawls for the first time in this region, located good commercial pink or "cocktail" shrimp grounds off Grays Harbor and off Copalis Head. Shrimp production from these grounds totaled over 2 million pounds in 1957, and at present there are at least three shrimp plants equipped with shrimp peeling machines in the Grays Harbor-Willapa Bay area actively engaged in canning shrimp.

Preliminary shrimp explorations by the Fish Commission of Oregon in 1951, utilizing a small beam trawl, showed that pink shrimp were widely distributed between the Columbia River and Yaquina Head. Although there has been only limited production of shrimp from these grounds to date, the recent establishment of two shrimp plants in the Astoria area has created a need for additional data on the shrimp potential of the area.

It was planned to spend a considerable amount of time fishing in waters deeper than 100 fathoms to determine if larger species of shrimp are present at these depths in significant quantities.



Oysters

INCREASED STARFISH POPULATION THREATENS LONG ISLAND INDUSTRY: The starfish has suddenly developed into a threat to the Long Island Sound oyster industry, the U. S. Bureau of Commercial Fisheries reported on March 27, 1958.

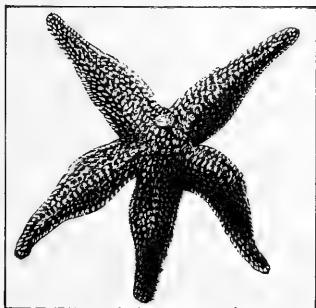
The crisis developed because of a "bumper crop" of starfish which increased that population about 10 times normal size. Eight years ago another such crisis occurred

in Long Island Sound when invading starfish wreaked havoc upon oyster beds up and down the Connecticut coast.

The 1958 starfish invasion, which has ruined from 60 to 90 percent of the oyster crop in some beds, is the latest of a series of problems which have beset the oystermen of the area. Lack of seed oysters necessary to maintain the fishery, an excess of the ever-present oyster drill, and the action of destructive storms are among the troubles of this unit of the industry.

The Bureau and the oyster industry have joined forces to attack these many problems. One policy upon which the scientists and the industry agree is the establishment of refuges in certain estuaries on Long Island Sound where oysters could be placed during these invasions, since neither the drill nor the starfish can tolerate brackish water. Such a move would not only offer a haven against predators but would probably increase the setting of oysters to provide badly needed seed for the continuation of the industry.

The Bureau, through its biological laboratory at Milford, Conn., has done considerable work on oyster problems of Long Island Sound. One Bureau project which has been carried to a successful conclusion in the laboratory stage is a method of artificial propagation of oysters. Another problem which the Oyster Institute, acting under contract with the Bureau, has been probing, relates to the use of natural ponds and estuaries in the seed oyster program. Other projects which are contemplated include expanded research on oyster larvae, their food, diseases and predators to determine the cause of good and bad setting years.



Pacific Oceanic Fishery Investigations

TAGGED SKIPJACK TUNA RETURNS HIGH: The recovery of skipjack tuna tagged by the U. S. Bureau of Commercial Fisheries Pacific Oceanic Fishery Investigations in 1957 has continued at a high rate. By February 25, 1958, some 736 recoveries had been made, or 9 percent of the total released. This high percentage of tag recoveries has some rather interesting implications. These are: (1) the high rate of returns may indicate little tagging mortality, which means that the plastic dart tag is a good tag for pelagic fish such as skipjack, and (2) also indicates that the Hawaiian aku or skipjack fishery took a suprisingly high proportion of the stock of fish in which the tagged fish were mingled.

The 1957 skipjack season in Hawaii was an unusual one in that the large skipjack of 18-22 pounds in weight, which normally occur during the summer months and are the backbone of the landings during that period, failed to appear. In addition, the annual catch for 1957 was the lowest on record, about half that of a normal year. The large skipjack are considered by the fishermen to be migratory and are called season fish. Their absence likely caused a concentration of fishing pressure on the smaller sizes which the fishermen regarded as being in part resident fish, at least when taken in inshore localities. The pattern of tag recoveries in relation to the areas of release of tagged fish was highest from those same inshore localities.

While it is obvious that additional tagging will be necessary before the migratory pattern of Hawaiian skipjack will be at all well understood, the present large number of recoveries--far larger than ever before attained in tuna tagging--may represent a breakthrough both as a technique and in understanding the movements and growth of Hawaiian skipjack.



Salt Marshes

CONFERENCE ON IMPORTANCE TO FISHERIES: A conference was held in Georgia the last week of March 1958 where scientists considered the importance of salt marshes in relation to abundance of oysters and other valuable fisheries.

Marshes form an important part of the coastline of the Chesapeake Bay and many South Atlantic States. Virginia biologists have found that they play an essential part in the lives of seafood animals. Accumulated plant and animal material on salt marshes is washed off by high tides and heavy rains, causing important changes on oyster grounds, and in the nursery grounds of crabs and migratory fishes. These materials can cause damage by using up the oxygen supply of the water and are believed to lead to such catastrophes as the 1955 kill of oysters in the Rappahannock River. Discussions at the conference brought to light many important facts that will help Virginia reap maximum benefit from her marine resources, reports a news release from the Virginia Fisheries Laboratory at Gloucester Point, Va.

Held at the Marine Laboratory of the University of Georgia at Sapelo Island, off the Georgia coast, the conference brought together biologists, geologists, oceanographers, and other scientists interested in the origin and role of salt marshes in the economy of the sea.

Among the guests were authorities from New Zealand, Great Britain, Germany, Holland, and Canada. Selected participants from the United States came from as far afield as California, Colorado, Louisiana, Texas, and Massachusetts. Limited accommodations held the attendance down to about 50 participants, all experts in their particular specialties.

Theme of the conference was the importance of salt marshes as land forms, producers of vegetation, shelter, and feeding grounds for animals, and as historical records of past changes in topography of sea coasts.



Sardines

SPAWNING OFF SOUTHERN CALIFORNIA FAIRLY WIDESPREAD IN FEBRUARY 1958: Sardine spawning is fairly widespread around and below Point Conception, Calif., according to a preliminary examination by the U. S. Bureau of Commercial Fisheries biologists of plankton collected in a February 1958 cruise in waters off the coast of southern California. The spawning, which appears to be light to moderate, is much earlier in the year than is normal for that area and undoubtedly is related to the "warm" water conditions still occurring off southern California. From 1951 through 1957 there were only six occurrences of sardine eggs off southern California in January and February, i.e., less than one occurrence per year, on the average, for these two months. In February 1958 eggs and larvae were taken at 10 stations.

Plankton samples are examined as soon as they are brought into the Bureau's La Jolla, Calif., laboratory so that events taking place during the prevailing unusual water conditions may be known.



Shrimp

PACIFIC NORTHWEST SHRIMP INDUSTRY AIDED: Federal activities designed to help the recently established "cocktail" shrimp industry of the Pacific Coast are being conducted on the producer, processor, and consumer levels, the Department of the Interior reported April 8, 1958.

Involved in the program are the exploratory fishing, technological, and market development branches of the U. S. Bureau of Commercial Fisheries, United States Fish and Wildlife Service. Previously, Bureau activities have helped establish the industry by probing the locations and extent of the fishing grounds and by demonstrating the value of shrimp peeling machinery in the processing.

The present program consists of additional exploratory work and gear research, technological research on ways to maintain shrimp in prime condition until they are processed, and in extending the market for the finished product. The "cocktail" shrimp is usually canned and is a popular article with those who know it.

The Bureau's exploratory vessel John N. Cobb is scheduled to concentrate on shrimp fishing during the coming season. Approximately 12 weeks will be spent between Cape Flattery in Washington and Cape Blanco in Oregon. The vessel will also spend eight weeks in the vicinity of Kodiak Island and Cook Inlet in Alaska.

The Washington-Oregon portions of the exploratory work will be done in cooperation with the Washington Department of Fisheries and the Oregon Fish Commission; the Alaska portion in collaboration with the Alaska Department of Fisheries. The first cruise started March 17 and will end on April 11. Biologists from the State agencies will accompany the vessel on the cruise to collect shrimp samples and other data on the fishery.

The main objective of the first cruise will be to gain additional knowledge about the commercial shrimp potential of the area centered off the mouth of the Columbia River and to test the efficiency of various types and sizes of shrimp trawls. Among trawls to be tested is a 40-foot Gulf of Mexico flat-type vessel and two styles of larger semi-balloon trawls. A special exploratory effort to find stocks of larger shrimp will be made off the Alaska coast.

As in other fishery products the key to maintaining quality and flavor is careful handling which begins as soon as the shrimp is taken from the water. The pink shrimp is delicate and easily bruised. Bruising sets up a chemical process which adversely affects the color and flavor.

At a recent meeting in Seattle with 30 representatives of the Pacific Northwest shrimp industry, Bureau representatives outlined the results of previous technological research, showing the various points at which the bruising and crushing is more apt to occur, and demonstrating the preferred techniques for handling, storing and icing. Industry spokesmen have transmitted summaries of the Bureau's recommendations to the various segments of the fishery.

The "cocktail" shrimp has gained many followers in the Midwest. At the request of members of the industry, the Bureau's Market Development personnel is scanning the Midwest and other areas for possible additional markets to absorb this expected new production.



South Carolina

FISHERIES BIOLOGICAL RESEARCH PROGRESS, JANUARY-MARCH 1958: Oyster Research: A continuing study on growth and mortality of oysters, both in their natural environment and in the experimental ponds, at the Bears Bluff Laboratories, Wadmalaw Island, showed that none grew during the first quarter of 1958. Ordinarily oyster growth during this period of the year is good, and it must be assumed that the extreme temperatures of this winter is the primary cause for the lack of growth.

Despite the cold, only from 3 to 5 percent of the experimental oysters in the pond and in We Creek died. This is not an alarming mortality, and many of those killed were destroyed by blue crabs. (Progress Report No. 35, January-March 1958, of the Bears Bluff Laboratories.)

In addition to studies at the Laboratory proper, natural oyster reefs in the vicinity were examined in mid-March. Several square-yard samples were taken at low water upward to the limit of oyster growth. The 11-percent mortality found is not unusually high for South Carolina. The percentage of marketable oysters in these samples is low, only 6 percent are over 3 inches, with an additional 25 percent barely large enough to be used for canning purposes. A detailed study of the reproductive organs indicated that their development had been retarded, and that only a minute percentage showed any sexual development. Apparently spawning will be delayed this year.

The subnormal winter temperature has given impetus to a study, now under way, on the extremes of temperatures to which South Carolina oysters are subjected. Unlike oysters in the Chesapeake

Bay, for example, South Carolina oysters are exposed to air temperatures for several hours during the time of low water. The air temperatures to which they are subjected then are a great deal more extreme than the temperature of the water in which they are submerged in other areas.

Shrimp Research: Low-water temperatures in this quarter quite apparently caused most shrimp and fish to leave their usual habitat. This is shown by their scarcity in the 105 experimental trawl hauls made during the quarter at the 17 regular shrimp survey stations. No white shrimp were taken in 74 experimental trawls during February and March. The availability of white shrimp in January was, quite low, being about one-third of what it was in January 1957.

Likewise, commercial fish--that is sea trout, whiting, croaker, and spot--were scarce during this quarter. Excluding an abnormally large catch of spot taken in one drag off Kiawah Island in February, the catch per unit of effort of commercial fishes is 8 times less this year compared to last.

Several times slush ice was noted along the edge of the marsh and shore. Fish kills were reported and recorded in both inshore and offshore waters. The most drastic kill was reported by Wm. North who found 26 small (2-4 in.) channel bass per lineal foot frozen and dead along the edge of Wando River.

Although subnormal temperatures have resulted in a definite reduction in the productivity of experimental trawls, only continued sampling can determine what the final effects of the extreme cold

will be. Toward the end of the quarter, young croaker and spot, and other fishes began to reappear in the experimental catches.

On February 21, Bears Bluff Laboratories vessel T-19 made a run southeastward 135° from the North Edisto sea buoy. In 11 fathoms of water at approximately 32° 17' N. and 79° 52' W. a few dead fish were noted floating on the surface. These proved to be angelfish (*Angelichthys isabellita*, Jordan & Rutter). On the same day the trawler Hope, a few miles to the southward and a few miles further offshore than the T-19, reported running through about 15 miles of scattered dead fish. Most of the fish were angelfish, but a few dead porgy and vermilion snapper were also reported.

On February 24 and 25, the T-19 again resumed the general area, taking water temperatures and making occasional sample trawls. The presence of several species of live fishes in the trawls, with the observation that the dead fish found on the surface were mostly of one species (angelfish) eliminates manmade devices such as depth charges as the cause of this fish kill. The survey indicated that there was a mass of cold water ranging from 40° to 50° F. lying along the shore out to approximately 15 fathoms. Beyond the 15-fathom curve, the temperature rose rapidly, and at 23 fathoms had reached a temperature of 64° F. The angelfish, being largely a tropical fish, could not survive the low temperatures of this mass of cold water.

Pond Cultivation: This winter, the coldest on record since 1918, the 5 salt-water experimental ponds at Bears Bluff were frozen over, and the water temperature under the ice dropped to 32.5° F. Most of the experimental fishes in the ponds had already been killed by a previous cold spell, so that this temperature was of more theoretical than practical importance. The freeze-over did not kill the blue crabs in the ponds, however, and as soon as the water temperatures warmed again, the crab population became active. When one of the

ponds was drained on March 11, the crab population was reported as being about normal. Oysters in the ponds were not killed.

All the experimental ponds are now being prepared for stocking with shrimp and fish for a continued study of the productivity of these salt-water ponds.

Crab Research: In mid-January a crab tagging program was begun in cooperation with the U. S. Bureau of Commercial Fisheries. This program, planned several years previously, is an attempt to determine whether or not South Carolina crabs migrate from one river system to another. Through the combined efforts of 3 biologists of the Bureau at Beaufort, N. C., and 3 members of the Staff of Bears Bluff Laboratories, some 1,600 crabs were tagged and released in the North Edisto River.

There is no trawl fishery for crabs in the North Edisto River, nor at sea in the vicinity of the river mouth. There is normally an intense trawlfishery a few miles to the northward in the vicinity of Charleston and to the southward in the vicinity of St. Helena Sound. Through these tagged crabs it was hoped to determine whether or not the crab industry could recruit its catch from other geographical areas. To date, tag returns have been few--2 from the area of release, one upriver 2½ miles, and one 5 miles southward along the coast.

Bears Bluff Laboratories has recommended to the General Assembly that the crab trawling season be extended by two weeks. This was done after an examination of the catch records of the Laboratories' two research vessels; fishermen's catches; and the reports of landings of the Branch of Statistics of the U. S. Bureau of Commercial Fisheries. Monthly landings indicated that the commercial crab catch is off by at least 650,000 pounds during this quarter, coincident with cold weather. Extension of the season for two weeks would not put an undue strain on South Carolina's crab resources.



Sport Fishing License Sales Continue Upward Trend

The popularity of sport fishing and wild-game hunting in the United States soared to new heights during the fiscal year ending June 30, 1957, when a record total of 34,195,183 licenses was sold to devotees of these outdoor sports, the U. S. Fish and Wildlife Service reported on March 16, 1958.



This represents an increase of 1,031,352 over the previous high total attained in fiscal year ending June 30, 1956, when 33,163,831 paid fishing and hunting license holders were recorded. The 1957 total was divided between 19,276,767 for fishing and 14,918,416 for hunting. Fishing licenses accounted for the largest proportion of the increase--574,784 against 456,568 for hunting licenses.

Total cost to hunter and anglers for all licenses, permits, tags, and stamps (not including the Federal "duck stamp") was \$90,617,039--an increase of \$829,145

over the previous year's total of \$89,787,894. Hunting licenses amounted to \$47,847,456 of the 1957 total while fishing licenses cost \$42,769,583.

Resident fishing licenses accounted for 16,645,394 of the 19,276,767 total; nonresident licenses numbered 2,631,373. The states to attract the greatest number of nonresident anglers were Wisconsin (354,897), Minnesota (303,339), Michigan (267,217), Florida (195,925), Tennessee (169,047), and Colorado (119,288). Almost one-half--or 24,773--of Nevada's total of 54,259 fishing license holders were nonresidents.

In the category of hunting license sales, the total of 14,918,416 was divided between 14,508,469 resident and 409,947 nonresident. Pennsylvania had the greatest number of nonresident hunters--35,503.

Under the Federal aid formulas for the distribution of Pittman-Robertson funds for the restoration of game and the Dingell-Johnson funds for the restoration of sport fishes, the number of license holders (not the amount paid for licenses) is one of the factors considered for apportionment purposes.

NOTE: ALSO SEE COMMERCIAL FISHERIES REVIEW, APRIL 1957, P. 25

State Fishing Licenses Issued in the United States, July 1, 1956, to June 30, 1957				
State	Paid Fishing License Holders			Total Cost to ^{1/} Anglers for All Licenses, Permits, Stamp, etc.
	Resident	Nonresident	Total	
	No.	No.	No.	\$
Alabama	437,132	27,847	464,979	746,876.80
Arizona	161,671	17,340	179,011	452,288.30
Arkansas	373,261	25,581	398,842	398,842.20
California	1,391,619	19,645	1,411,264	4,158,271.00
Colorado	229,791	119,288	349,079	1,268,706.50
Connecticut	103,682	4,287	107,969	384,761.10
Delaware	9,651	1,406	11,057	384,740.65
Florida	202,553	195,925	398,478	984,718.75
Georgia	408,620	7,761	416,381	555,278.93
Idaho	158,498	54,195	212,693	666,167.00
Illinois	807,442	18,984	826,426	959,236.20
Indiana	804,570	42,372	846,942	882,189.40
Iowa	367,837	14,474	382,311	544,452.50
Kansas	204,428	5,799	210,227	431,050.50
Kentucky	337,042	75,332	412,374	874,209.00
Louisiana	186,106	32,651	218,757	295,859.00
Maine	150,029	78,056	228,085	822,915.75
Maryland	123,948	22,769	146,717	234,229.50
Massachusetts	218,157	5,446	223,603	644,928.37
Michigan	852,440	26,217	1,119,657	2,452,974.00
Minnesota	939,763	303,339	1,243,102	3,051,524.20
Mississippi	140,804	52,975	193,779	396,309.50
Missouri	516,634	61,645	578,279	1,486,167.55
Montana	188,509	49,806	238,315	613,478.50
Nebraska	189,253	10,034	199,287	306,343.50
Nevada	29,486	24,773	54,259	193,134.50
New Hampshire	82,744	53,526	136,270	497,851.25
New Jersey	145,365	10,485	155,850	613,467.25
New Mexico	67,286	33,326	100,612	377,819.90
New York	778,207	50,429	828,636	1,890,198.75
North Carolina	340,013	44,372	384,385	707,190.10
North Dakota	70,342	2,157	72,499	76,813.00
Ohio	884,163	27,599	911,762	1,879,223.00
Oklahoma	323,420	63,780	387,200	840,437.00
Oregon	326,329	29,032	355,361	1,280,512.50
Pennsylvania	688,362	30,501	718,863	1,839,772.00
Rhode Island	16,879	689	17,568	547,073.63
South Carolina	243,485	16,098	259,583	500,312.50
South Dakota	84,076	39,682	123,758	239,942.00
Tennessee	485,373	169,047	654,420	799,775.00
Texas	417,620	9,416	427,036	708,583.85
Utah	155,884	10,387	166,271	492,160.40
Vermont	72,089	36,135	108,224	257,260.50
Virginia	171,072	15,006	186,078	636,536.00
Washington	375,438	25,594	399,032	1,461,643.50
West Virginia	211,102	9,885	220,987	441,764.05
Wisconsin	787,829	354,897	1,142,726	2,478,486.50
Wyoming	108,191	62,083	170,274	599,663.50
TOTALS	16,645,394	2,631,373	19,276,767	42,769,583.38

^{1/}THIS IS THE GROSS COST TO THE FISHERMEN FOR VARIOUS TYPES AND CATEGORIES OF LICENSES ISSUED BY THE RESPECTIVE STATES FOR THE PRIVILEGE OF FISHING AND/OR POSSESSING FISH.



Trout

UNITED STATES GROWERS ASSOCIATION ADOPTS IDENTIFYING SEAL: A new seal identifying high-quality United States-grown mountain trout has been adopted by the U. S. Trout Farmers Association for use with advertising, package labels, stationary, and identification tags, according to the President of the Association.

The seal, depicting two mountain trout, one following the other in oval design, will be used by the Association and individual members of the Association. Its primary purpose is to readily identify United States-grown trout and minimize confusion created by some foreign trout importers who use a United States address.

The President said the seal was adopted by the Association and its individual members as a part of a newly-formed advertising program wherein they will feature the high quality of mountain trout produced in United States streams.

There are approximately 360 producers of trout in the United States, of which about 75 - 100 raise trout to commercial sizes for the institutional restaurant and hotel trade, and for wholesale and retail food outlets. Among the other producers are state hatcheries, private fishing clubs, public fishing clubs, Federal hatcheries, fish-out fishing ponds, and others. Rainbow, eastern brook, brown, cutthroat and miscellaneous kinds of trout are grown by these producers.

"One of the greatest problems in placing trout on the menu is to be assured a top-quality product," said the President. "The U.S. Trout Farmers Association has top-quality production as one of its primary objectives, and it intends to identify such top quality with a seal. Top quality can be maintained on trout produced within the United States because there is little time lapse from the cold streams where the trout are produced to the customer's table."



Unique Devices Being Developed for Fishery Research and Management

The haddock, which has been a popular northwest Atlantic food fish for four centuries, is about to join the "do-it-yourself" club--that is if a device which technicians and biologists of the Department of the Interior now have in process of invention proves successful. The device is an instrument with which a haddock will automatically attach a metal tag to its own body, a Department news release of April 13 reports.

Two methods for tagging haddock are being explored. Common to both will be a fish weir or trap with an escape opening. One plan is to have an electronic tagging device which the fish will trigger as it goes through the opening. Another is to have both a tagging device and an underwater television camera at the point of escape. A man on shipboard would watch the fish as it goes through the opening, press a button and put the tagging apparatus in action.

The second method would permit the accumulation of biological data as well as providing a means for tagging. This device is being developed for use on haddock research but can be used quite generally in tagging work.

Other aids to fishery research and management which the Bureau of Commercial Fisheries, United States Fish and Wildlife Service, is developing include: an electric "sentry" to keep carp and other undesirable fish out of river basin impoundments; a detector which will "put the finger" on a herring carrying a metal tag even though that particular herring may be covered by a whole netful of other herring; a pocket-size underwater television camera for use in streams; and a temperature regulator which will permit testing the reaction of fish to changes in water temperature.

The Bureau of Commercial Fisheries has already created or developed such things as the electrical fence to kill sea lamprey or to guide adult salmon away from danger areas; an electric fish counter and an automatic camera by which a fish takes its own picture as it passes a research point; a transmitter which can be attached to the back of salmon and which will inform on the whereabouts of the salmon for as long as eight hours; a telemeter to indicate the location of a mid-water trawl; and a "carriage" which permits proper mobility of underwater television cameras in fishery research.

One of the tasks of the Bureau of Commercial Fisheries is to develop data and to effect practices which will help commercial fishermen catch fish at a rate to assure maximum sustained harvest. One of the items essential to carrying out this responsibility is knowledge of the migration pattern of a species.

Considerable research is being done on haddock because of its importance to the consumer and the fisherman, and because the annual harvest which once exceeded 260 million pounds now approximates 135 million pounds. Haddock is one of the species of fish which spawn in the sea and which put their fertilized eggs at the mercy of the winds and the waves. Even the young fish are at the mercy of the currents for some three months before they flip their tails skyward and head for the bottom.

The electric "sentry" will be especially valuable to the sport fisheries since this technique offers what appears to be an excellent opportunity to keep rough fish out of sportfish waters. This device will be largely an adaptation of the electric fence already being used. It will be located at points through which the rough fish enter the impoundment and will carry an electric charge heavy enough to kill any fish entering the field. It will operate at places and times to prevent or minimize destruction of the wanted species.

The herring tag detector is being developed for use on Alaska herring research. These small fish are taken in such great quantities that tagged individuals are too often "lost in the crowd." The detector will help locate these fish when they are harvested and permit notation of pertinent migration data.

Underwater television is being used in biological studies in coastal waters but present equipment is too large for effective use in smaller streams. Since many species of fish spend part of their life in inland streams, a small television camera would prove valuable in studies of these fish or any fish which spend all or part of their life in rivers or creeks. The temperature regulator would permit laboratory simulation of natural water temperature conditions.

Several of the devices mentioned above have been developed at the Fisheries Instrumentation Laboratory, a unit of the Pacific Salmon Investigations at Seattle, Wash. This unit has a staff of experts--electrical engineers, electronic engineers, and instrument makers--who are qualified to develop new devices that will improve the efficiency and effectiveness of fishery research and management. The services of this unit have been made available over a wide geographical area and the demands for its services are constantly increasing. The development of specialized units of this type to serve the needs of research workers is one of the means adopted in recent years to improve the effectiveness of the Bureau's operations.



United States Fishing Fleet^{1/} Additions

JANUARY 1958: Forty-six vessels, of 5 net tons and over, were issued first documents as fishing craft during January 1958--20 more than in January 1957. The

Table 1 - U. S. Vessels Issued First Documents as Fishing Craft, by Areas January 1958 with Comparisons

Area	January		Total 1957
	1958	1957	
(Number).....		
New England . .	1	1	19
Middle Atlantic	1	2	23
Chesapeake . . .	7	8	104
South Atlantic .	15	8	130
Gulf	16	1	166
Pacific	6	2	102
Great Lakes . .	-	-	8
Alaska	-	4	48
Puerto Rico . .	-	-	1
Total	46	26	601

NOTE: VESSELS ASSIGNED TO THE VARIOUS SECTIONS ON THE BASIS OF THEIR HOME PORTS.

Table 2 - U. S. Vessels Issued First Documents as Fishing Craft, by Tonnage, January 1958

Net Tons	Number
5 to 9	11
10 to 19	8
20 to 29	5
30 to 39	12
40 to 49	4
50 to 59	4
90 to 99	1
180 to 189	1
Total	46

Gulf area led with 16 vessels, followed by the South Atlantic with 15, the Chesapeake 7, the Pacific 6, and the New England and Middle Atlantic areas with 1 vessel each.

^{1/}INCLUDES BOTH COMMERCIAL AND SPORT FISHING CRAFT.



U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS, JANUARY 1958: Imports of edible fresh, frozen, and processed fish and shellfish into the United States during January 1958 were up about 4.2 percent in quantity, but were 3.5 percent lower in value as compared with December 1957. Compared with January 1957, the imports this January were

lower by 7.3 percent in quantity and 5.3 percent in value. The imports for January 1958 were higher than in December 1957 for groundfish fillets, frozen tuna, canned salmon, and canned sardines. These increases more than offset lower imports of lobster and spiny lobster tails, shrimp, and canned tuna. Imports of edible fishery products in January this year were down substantially from the same month in 1957 for groundfish fillets (40 percent), canned salmon, and lobster and spiny lobster tails. These decreases in January 1958 were partially offset by moderate increases in the imports of other fillets, canned sardines, and frozen tuna.

Table 1 - United States Foreign Trade in Edible Fishery Products, January 1958 with Comparisons

Item	Quantity			Value		
	Jan.	Year		Jan.	Year	
	1958	1957	1957	1958	1957	1957
	(Millions of Lbs.)			(Millions of \$)		
Imports:						
Fish & Shellfish:						
Fresh, frozen & processed ^{1/}	67.6	73.0	837.0	19.5	20.6	248.4
Exports:						
Fish & Shellfish:						
Processed only (excluding fresh and frozen) ^{1/}	2.6	9.2	69.7	0.6	1.8	16.8

^{1/}INCLUDES PASTES, SAUCES, CLAM CHOWDER AND JUICE, AND OTHER SPECIALTIES.

United States exports of processed fish and shellfish in January 1958 were lower by 49.2 percent in quantity and 40.0 percent in value as compared with December 1957. Compared with the same month in 1957, the exports in January 1958 were down by 82.3 percent in quantity and 66.7 percent in value. The sharp decreases in both quantity and value this January as compared with a month ago and the same month in 1957 were due, primarily, to a shortage of the usual types of canned fish available for export, chiefly California sardines and Pacific mackerel.

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GROUNDFISH FILLET IMPORTS, FEBRUARY 1958: During February 1958, imports of groundfish fillets (including ocean perch) and fish fillet blocks amounted to 11.2 million pounds. Compared with the corresponding month of last year, this was an increase of 4.2 million pounds (60 percent). Imports of 4.5 million pounds of groundfish and ocean perch fillets from Iceland were primarily responsible for the over-all increase. There were no imports from Iceland during February 1957.

Canada continued to lead all other countries exporting these fillets to the United States with 5.9 million pounds during February 1958. Iceland was next with 4.5 million pounds. Imports from Norway, Denmark, the Netherlands, and Miquelon and St. Pierre accounted for the remaining 804,000 pounds.

Imports of groundfish and ocean perch fillets and blocks into the United States during the first two months of 1958 totaled 21.9 million pounds. Compared with the same period of last year, this was a decrease of 4.1 million pounds or 16 percent. Canada accounted for 70 percent of these imports during the 1958 period, followed by Iceland with 24 percent. Norway, Denmark, the Netherlands, West Germany, and Miquelon and St. Pierre accounted for the remaining 6 percent.

NOTE: SEE CHART 7 IN THIS ISSUE.

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IMPORTS AND EXPORTS OF SELECTED FISHERY PRODUCTS, JANUARY 1958:
Summary: Imports of many of the major fishery products into the United States during January 1958 were less than in January 1957. Groundfish fillets and blocks were down 40 percent, canned tuna 23 percent, canned bonito 44 percent, canned salmon 40 per-

cent, and lobsters 37 percent. Increases were noted in fillets other than groundfish (up 18 percent), frozen tuna (6 percent), canned sardines (93 percent), canned crabmeat (53 percent), and fish meal (82 percent). There was little change in shrimp and swordfish imports in January 1958 as compared to January 1957.

Exports of the major fishery products in January 1958 were substantially less than during that month in 1957, due primarily to the shortage of exportable supplies of canned California sardines, canned mackerel, and fish oils.

Imports: FROZEN TUNA: Imports of 13.2 million pounds during January 1958 were up 6 percent from January 1957. Frozen albacore imports were 5.2 million pounds, an increase of 184 percent as compared to January 1957; other frozen tuna declined by 25 percent.

TUNA LOINS AND DISCS: Imports of frozen cooked tuna in the form of loins and discs has been increasing. In January 1958, 1.4 million pounds were imported, 66 percent more than in January 1957. Japan was the largest supplier. Initial shipments reported from Cuba during January 1958 totaled 154,000 pounds.

CANNED TUNA: In January 1958, 1.5 million pounds of canned tuna were imported, 23 percent less than in January 1957. Imports of canned tuna, other than albacore, amounted to 1.3 million pounds, an increase of 24 percent; imports of canned albacore this January were 76 percent less than in January 1957.

GROUND FISH: Imports of groundfish and ocean perch fillets and blocks in January 1958 totaled 11.0 million pounds, a decline of 40 percent from the same month a year ago. Imports of groundfish fillets (cod, ocean perch, and haddock) decreased an average of 50 percent; blocks decreased 24 percent. Imports from Iceland during January were 80 percent less than for that month in 1957.

SHRIMP: Imports in January were 5.7 million pounds, only slightly below the imports in January of last year. Imports from Mexico amounted to 3.9 million pounds.

CANNED SALMON: Imports of 2.7 million pounds were 40 percent less than the same month a year ago. Japan was the principal supplier with 2.3 million pounds.

FRESH AND FROZEN LOBSTER: Imports during January 1958 were 3.0 million pounds or 37 percent less than during January 1957. Canada supplied about half of the January 1958 imports.

CANNED SARDINES: Imports during January 1958 amounted to 3.5 million pounds, nearly double that of the same month of 1957. The increase was mostly sardines, not in oil, from the Union of South Africa.

CANNED BONITO: Total January 1958 imports of 910,000 pounds decreased 44 percent from the same period last year due to a decline in imports from Peru.

SWORDFISH: Imports in January of 1.5 million pounds were about the same as during January 1957. These imports were almost entirely from Japan.

CANNED CRABMEAT: Imports totaling 467,000 pounds were 53 percent more in January 1958 than in January 1957 due to higher imports from Japan.

FISHMEAL: Imports of fishmeal totaled 7,696 tons, an increase of 82 percent over January 1957. Gains were reported in the imports from Peru and Norway.

Exports: CANNED SARDINES: Exports of canned California sardines to all countries declined to 592,000 pounds in January 1958, a decrease of 77 percent over the same period last year.

CANNED MACKEREL: Exports of 648,000 pounds indicate a decrease of 67 percent in January 1958, as compared with the same month last year. The principal decline was reported in exports to the Philippines.

CANNED SALMON: Canned salmon exports were 81,000 pounds, 76 percent less than in January 1957.

FISH OIL: January exports of fish oil totaled 6.1 million pounds, down 63 percent from the same month last year. Most of the decrease was in shipments to West Germany; exports to Canada increased.

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IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA PROVISIO: The quantity of tuna canned in brine which may be imported into the United States during the calendar year 1958 at the 12½-percent rate of duty has not been established as yet. Any imports in excess of the established quota will be dutiable at 25 percent ad valorem.

Imports from January 1-March 1, 1958, amounted to 4,341,824 pounds, according to data compiled by the Bureau of Customs.



Virginia

LABORATORY TO STUDY PARASITES ON FISH FROM ANTARCTICA: Word has just reached Dr. William J. Hargis, Jr., of the Virginia Fisheries Laboratory that members of the International Geophysical Year Expedition to Antarctica will collect and ship fishes to him for use in his study of fish parasites. Dr. Hargis is one of the country's leading experts on certain parasites found on the gills of fishes. Two years ago he received gills from South African coelacanth, a strange fish whose ancestors were once thought to have been extinct for at least 20 million years.

For years the biologist has been gathering information about these parasites and from his studies has theorized that it is possible to learn about the relationships and travels of fishes from studies of the parasites living on them. "Fish parasites have evolved in ways which enable them to survive year after year on the fishes to which they are attached. Over long periods of time, fishes themselves have changed to meet changing environmental conditions. Parasites have largely become adapted to specific fishes and will not normally develop unless those particular fish are available to them," he states. "But this work also has tremendous potential importance to our eventual understanding of the phenomenon of parasitism itself," he further declared.

Since transportation from the Antarctic to the continental United States has ceased because of the approaching winter in the southern hemisphere, it is not likely that any fish will reach the Virginia Laboratory before next December or January.

* * * * *

SURVEY OF SALT-WATER SPORT FISHING NEARING COMPLETION: Salt-water sport fishermen in Virginia catch at least 3.5 million pounds of fish each year, according to a biologist of the Virginia Fisheries Laboratory at Gloucester Point, Va.

In 1955 a survey of sport fishing in Tidewater was initiated, to estimate the catch by sports fishermen in the bottom fishery, which takes principally croaker,

spot, gray sea trout (weakfish), and flounder or fluke. Selected party-boat operators and private fishermen were given record books in which they were asked to write down their catches and the length of time spent fishing each day. Other sport fishermen were interviewed on the fishing grounds, or on piers, and at boat liveries. Counts of fishermen also were made from piers and bridges, and by air. The survey continued through 1956 and 1957, and a detailed report will be released soon.

Sport fishing usually reached a peak about the middle of the morning and the numbers of fishermen decreased steadily after 11 a.m. The amount of fishing increased seasonally also, reaching a peak in July. Heaviest fishing was on weekends and holidays, when at least three times as many fishermen tried their luck. The Fourth of July was the busiest day. It was estimated that on the lower York River alone, 1,141 sport fishermen were out on that date in 1957. Growth of the salt-water sport fishery is illustrated by the increase from 825 on July 4, 1955, and 1,034 on July 4, 1956.

Croaker catches were best in late June or early July but most spot and trout were caught in September. The flounder catch remained fairly steady throughout the season.

Best croaker catches were made in the lower part of the Bay, at Ocean View, Hampton Roads, and the York River. Spot fishing was best in the Rappahannock and at Ocean View.

The total annual catch of croakers was about 6.5 million fish weighing nearly 3 million pounds; spot almost 2 million fish weighing half a million pounds; trout 0.5 million fish weighing 150,000 pounds, and flounder 70,000 fish weighing about 70,000 pounds.

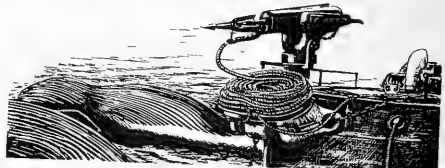
Records published by the U. S. Bureau of Commercial Fisheries for 1956 indicate that commercial fishermen landed 9.5 million pounds of croakers, 3.25 million pounds of spot, 3.25 million pounds of gray sea trout, and 2 million pounds of flounders or fluke in Virginia in 1956. The sport fishery took almost as many croakers and spot as pound nets did.



Whaling

UNITED STATES CATCH IN 1957: America's only active whaling fleet--the Dennis Gayle, the Allen Cody and the Donna Mae--brought in 237 whales during the 1957 season, the Department of the Interior reported on March 28. Most of the whales were taken in the vicinity of the Farallon Islands which are about 30 miles west of the Golden Gate.

Whale oil is no longer essential for lamps, nor is whalebone so important to a lady's wardrobe, but the mink farms, the cosmetic industry, the soap and washing powder business, the pet food plants, the paint factories, and dozens of other modern industries offer a market for whale products and their derivatives.



WHALE HARPOON GUN

The 1957 harvest consisted primarily of humpback whales--199 were taken. There were 22 finbacks, 14 sperm whales, one sei, and one bottlenose. The season on humpbacks and finbacks was from May 1 to October 31, but the sperm whales

were taken from April 1 to November 30. Processing these whales resulted in 3,277,350 pounds of whale oil, 2,494,000 pounds of whale meal, and 1,797,000 pounds of whale meat.

The largest whale taken was a 68-foot finback, but two other finbacks measured 67 feet each, and others were in excess of 60 feet. The finback produces between 12 and 15 tons of meat. The humpback whale averages between 40 and 43 feet in length and yields between 6 and 8 tons of meat and 1,800 gallons of oil.

There were 145 whales taken in 1956 when the United States industry was reactivated after a five-year lapse. Whalers first operated off the California coast in the early 1800's. The first shore installation was in 1841 and the whaling industry on the Pacific Coast has continued intermittently ever since. American whaling activities in the Atlantic were once an important marine operation, but no whales have been taken off the East Coast for many years.

The Secretary of the Interior is responsible for the issuance of licenses and for the collection of statistical and biological data on whales. Reports are made through the Bureau of Commercial Fisheries, U. S. Fish and Wildlife Service, on all operations, number of men employed, and size and species of whales as required by the whaling treaty. These data are transmitted to the International Bureau for Whaling Statistics, Sandefjord, Norway, for compilation and publication.



Wholesale Prices, March 1958

Seasonal declines in fresh drawn haddock, fresh haddock fillets, and frozen shrimp wholesale market prices were primarily responsible for the slight decline in the March index as compared with the preceding month. In March 1958 the edible fish and shellfish (fresh, frozen, and canned) wholesale price index (124.5 of the 1947-49 average) declined 1.9 percent as compared with February, but was 4.3 percent higher than in the same month a year ago.

Wholesale prices for drawn, dressed, and whole finfish from February to March 1958 decreased about 8.7 percent due mostly to a 39.1-percent drop in the price for

fresh drawn haddock at Boston. Declines in haddock and other groundfish prices at New England ports are to be expected in late winter and early spring as the catches improve at this period of the year. The lower fresh haddock prices more than offset increases in fresh-water whitefish. Due to the continued scarcity of fresh-water lake trout, this product has been dropped from the index beginning with January 1958. In addition, all subgroup indexes have been reweighted beginning with January 1958 (see footnote). The wholesale price index this March for the subgroup was higher by 1.4 percent than in the same month in 1957, due to higher frozen dressed halibut and salmon prices. All other items in this subgroup were lower in March 1958 than in March 1957.

The fresh processed fish and shellfish subgroup wholesale prices in March this year were unchanged from the preceding month. A rather sharp decrease in small haddock fillet prices was compensated for by the higher fresh shrimp and shucked oyster prices. Compared with March 1957, the index for this subgroup this March was higher by 1.3 percent because of higher fresh haddock fillet prices (up 1.6 percent) and fresh shrimp (up 5.5 percent) prices. These increases offset a 6.3-percent drop in shucked oyster prices at Norfolk.

Frozen processed fish and shellfish prices in March 1958 were about as in the preceding month since the increase in the frozen flounder fillet price was about balanced out by a slight drop in the frozen shrimp price at Chicago. From March a year ago to March this year the frozen processed fish and shellfish subgroup advanced 17.3 percent due to higher wholesale prices for all frozen fillet items and frozen shrimp.

The canned fishery products subgroup index in March 1958 was up about 0.5 percent from the preceding month due to a 1.3-percent increase in canned tuna prices; other canned fish prices were unchanged. This March as compared with March a year ago wholesale canned fish prices were about unchanged. Higher canned tuna and California sardine prices were offset by lower (12.2 percent) canned Maine sardine prices.



FULTON FISH MARKET, NEW YORK CITY, SHRIMP ON DISPLAY AT ONE OF THE STANDS.

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, March 1958 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices ^{1/}		Indexes (1947-49-100)			
			(\$)					
			Mar. 1958	Feb. 1958	Mar. 1958	Feb. 1958	Jan. 1958	Mar. 1957
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					124.5	2/126.9	2/123.7	119.4
Fresh & Frozen Fishery Products:					140.7	2/144.9	2/140.3	132.0
Drawn, Dressed, or Whole Finfish:					125.1	2/137.0	2/133.5	123.4
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.09	.15	91.2	149.7	152.3	100.5
Halibut, West., 20/30 lbs., drsd., fresh or froz.	New York	lb.	.32	.32	99.0	97.5	96.4	95.9
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.63	.63	139.9	141.0	138.8	139.3
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.75	.60	185.9	148.7	146.3	195.8
Whitefish, L. Erie pound or gill net, rnd., fresh	New York	lb.	.80	.64	161.3	128.4	128.4	182.0
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.68	.70	158.3	164.1	111.4	173.5
Processed, Fresh (Fish & Shellfish):					144.6	2/144.6	2/144.2	142.7
Fillet, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.35	4.49	119.1	165.0	163.3	117.4
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	.96	.95	151.7	150.1	140.6	143.8
Oysters, shucked, standards	Norfolk	gal.	5.63	5.38	139.2	133.0	145.4	148.5
Processed, Frozen (Fish & Shellfish):					140.9	2/141.1	2/131.3	120.1
Fillet, flounder, skinless, 1-lb. pkg.	Boston	lb.	.41	.40	106.0	103.4	103.4	103.4
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.40	.40	125.6	125.6	117.7	87.9
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.30	.30	118.3	118.3	114.8	114.8
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.94	.95	144.3	145.8	131.5	128.9
Canned Fishery Products:					101.8	2/101.3	2/100.4	101.5
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	23.00	23.00	120.0	120.0	120.0	120.0
Tuna, 1/2, meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.50	11.35	82.9	81.8	81.8	80.8
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 48 cans/cs.	Los Angeles	cs.	9.75	9.75	113.3	113.3	113.8	105.0
Sardines, Maine, keyless oil, No. 1/4 drawn (3-1/4 oz.), 100 cans cs.	New York	cs.	6.99	6.99	74.3	74.3	67.9	84.6

^{1/} Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs.

These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.

^{2/} Revised due to new weighting structure reflecting 1954 values.

NOTE: REVISION OF WEIGHTING STRUCTURE: THE BUREAU OF LABOR STATISTICS HAS COMPLETED A REVISION OF THE WEIGHTING STRUCTURE OF THE WHOLESALE PRICE INDEX, IN ACCORDANCE WITH ITS POLICY TO REVISE THE INDEX WEIGHTS WHENEVER COMPREHENSIVE DATA FROM THE INDUSTRIAL CENSUSES BECOME AVAILABLE.

FIGURES FOR JANUARY, FEBRUARY, AND MARCH 1958, CONSTRUCTED WITH THE NEW WEIGHTS, ARE PRESENTED FOR THE FIRST TIME IN THIS RELEASE. THESE INDEXES CONSTITUTE THE OFFICIAL JANUARY AND FEBRUARY INDEXES. THE INDEXES FOR THESE 3 MONTHS ARE DIRECTLY COMPARABLE WITH THE DECEMBER INDEXES CALCULATED WITH THE OLD WEIGHTS; INDEXES FOR JANUARY AND FEBRUARY, COMPUTED WITH THE OLD WEIGHTS, WHICH APPEARED IN EARLIER RELEASES ARE NO LONGER OFFICIAL.

THE NEW WEIGHTING STRUCTURE INCORPORATED STATISTICS ON NET SELLING VALUE OF COMMODITIES IN THE YEAR 1954 AS REPORTED IN THE 1954 CENSUS OF MANUFACTURES, CENSUS OF MINERALS INDUSTRIES, VARIOUS OTHER DATA FURNISHED BY THE BUREAU OF MINES OF THE U. S. DEPARTMENT OF INTERIOR, THE U. S. DEPARTMENT OF AGRICULTURE, AND OTHER SOURCES. FROM JANUARY 1947 THROUGH 1954 THE WEIGHTS WERE BASED PRIMARILY ON THE 1947 INDUSTRIAL CENSUSES. ADJUSTMENTS WERE MADE IN JANUARY 1955 TO ALIGN THE MAJOR GROUP WEIGHT TOTALS WITH THE 1952-53 AVERAGE SHIPMENT VALUES BUT THIS DID NOT REPRESENT AS COMPLETE A WEIGHT REVISION AS THE ONE NOW IN FORCE.

THE CURRENT WEIGHT REVISION LEAVES THE INDEX CONCEPT BASICALLY UNCHANGED. THE INDEX, AS BEFORE, REPRESENTS THE PRICE MOVEMENT OF THE AGGREGATE OF COMMODITIES PRODUCED AND PROCESSED IN THIS COUNTRY (OR IMPORTED), AND FLOWING INTO PRIMARY MARKETS. THE WEIGHTS REPRESENT THE NET SELLING VALUES IN THE WEIGHT BASE REFERENCE PERIOD, IN THIS CASE 1954. THESE VALUES ARE F.O.B. PRODUCTION POINT AND EXCLUSIVE OF EXCISE TAXES. SPECIAL ATTENTION WAS GIVEN TO DEVELOPMENT OF DATA ON INTERPLANT TRANSFERS. THESE ARE EXCLUDED, AS ARE MILITARY PRODUCTS, AND GOODS SOLD AT RETAIL DIRECTLY FROM PRODUCING ESTABLISHMENTS.

ABOUT 90 NEW ITEMS HAVE BEEN ADDED TO THE BUREAU OF LABOR STATISTICS WHOLESALE PRICE INDEX (THERE WERE NO ADDITIONS TO THE "FISH AND SHELLFISH" PART OF THE INDEX), MOSTLY IN THE MACHINERY AND METAL GROUPS; AND 58 ITEMS HAVE BEEN DROPPED (FRESH-WATER LAKE TROUT WAS THE ONLY PRODUCT DROPPED FROM THE "FISH AND SHELLFISH" PART OF THE INDEX) BECAUSE OF THEIR DECLINING IMPORTANCE IN TERMS OF VALUE OF SHIPMENTS.

THE DECREASE IN IMPORTANCE IN FARM PRODUCTS (GROUP 01) AND PROCESSED FOODS (GROUP 02) BETWEEN DECEMBER 1954 AND DECEMBER 1957 ON THE OLD WEIGHTING SYSTEM CAME ABOUT BECAUSE PRICES IN THESE GROUPS INCREASED LESS THAN IN THE INDEX AS A WHOLE DURING THIS PERIOD. THE INTRODUCTION OF NEW WEIGHTS INCREASED THE RELATIVE IMPORTANCE IN THE TOTAL INDEX OF SUCH SUBGROUPS AS FRUIT AND VEGETABLES AND LIVESTOCK AND POULTRY AND THEREFORE OF THE FARM PRODUCTS GROUP. FURTHER DECREASE IN RELATIVE IMPORTANCE FOR PROCESSED FOODS (GROUP 02) RESULTED FROM REWEIGHTING.





International UNITED NATIONS

CONFERENCE ON THE LAW OF THE SEA: The United Nations Conference on the Law of the Sea opened in Geneva February 24 with 89 nations represented. The conference is considering problems related to the limits of the territorial sea, regime of the high seas, contiguous zones, international fisheries, the continental shelf, and free access to the sea by landlocked countries.

The first week was spent in electing officers and completing organizational work for the conference. Prince Wan Wathaiyakon, Thailand, was elected conference president.

The work of the conference is divided into five committees. Committee One, on the territorial sea and contiguous zones, is concerned with matters such as breadth of the territorial sea, base lines, and contiguous zones.

Committee Two, on general regime of the high seas, is concerned with freedom of the high seas, rights of navigation, piracy, etc.

Committee Three, on fishing, is concerned with the right to fish, conservation, etc.

Committee Four is concerned with the continental shelf.

Committee Five is concerned with free access to the sea by landlocked countries.

The Department of State announced on February 22 the composition of the United States Delegation at the Conference.

In addition to Arthur H. Dean, who was named by the President to serve as Chairman of the United States Delegation, the other members of the Delegation are: United States Representative and Vice Chairman, William Sanders, Special Assistant to the Under Secretary of State, United States Representatives: Oswald S. Colclough, Vice Admiral, U.S.N. (Ret.), Department of the Navy; William C. Herrington, Special Assistant to the Under Secretary of State; Marjorie Whiteman, Assistant Legal Adviser, Department of State; Arnie J. Suomela, Commissioner of Fish and Wildlife, Department of the Interior; Raymond T. Yingling, Assistant Legal Adviser, Department of State. Alternate Representative: Nat B. King, Counselor of Embassy for Economic Affairs, Baghdad, Iraq. Senior Advisers: Franklin C. Gowen, United States Representative for International Organizations, Geneva, Switzerland; Ross L. Leffler, Assistant Secretary of Interior for Fish and Wildlife; David H. Popper, Deputy United States Representative for International Organizations, Geneva, Switzerland.

The foregoing group is assisted by technical advisers from both government and industry.

The General Assembly of the United Nations in Res. 1105 (XI) of February 21, 1957, called for an international confer-

ence of plenipotentiaries to examine the law of the sea "taking account not only of the legal but also of the technical, biological, economic and political aspects of the problem. . . ."

The conference is considering the problems as they relate to the limits of the territorial sea, regime of the high seas, contiguous zones, international fisheries, the continental shelf and free access to the sea of landlocked countries. The results of the deliberations may be embodied in "one or more international conventions" as envisaged by the General Assembly. The conference is expected to remain in session for about nine weeks.

The United Nations Conference on the Law of the Sea on February 25 rejected suggestions that observers or experts from countries not invited to the conference be permitted to participate in its deliberations without the right to vote.

By a vote of 62 in favor to 12 opposed, the conference decided that it was not competent to decide such matters, final decision on participation and invitations having been made by the General Assembly. The position was put forward by the representative of the United States, Arthur H. Dean.

In the course of the debate, H. Baghdadi (Yemen) expressed belief that a Bulgarian proposal to invite observers from countries not now represented would permit the conference to "enrich its technical documentation." He proposed that the conference General Committee be empowered to authorize the sending of observers or experts from states not invited to the conference.

Grigory I. Tunkin (U.S.S.R.), speaking in support of the Bulgarian proposal, said no country should be excluded from debates on matters of interest to them. Since not all countries were invited, at least observers should be admitted, in his view. He said that if the Bulgarian proposal was withdrawn he would support the suggestion by Yemen.

Subsequently, the Bulgarian proposal was withdrawn in favor of the proposal by the representative of Yemen.

Dean (United States) asked the conference to vote on his view that the conference was not competent to examine the Yemeni suggestion.

Statements against the Bulgarian proposal also came from representatives of the Philippines, El Salvador, the Republic of Korea, China, Vietnam, and Nepal. The representative of India regretted the exclusion of states but, on principle, said he did not feel that the Assembly decision should be modified. Support for Bulgaria came from the representative of Romania.

The conference is expected to last about nine weeks, and is the first conference ever assembled to attempt international agreement on maritime law.

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STATEMENT BY U. S. DELEGATE TO COMMITTEE THREE ON FISHING: Following is the statement of William C. Herrington in the Third Committee on fishing (concerned with the right to fish, conservation, etc.) at the United Nations Conference on the Law of the Sea opened in Geneva on February 24.

Mr. Chairman and fellow delegates:

It is an honor and a privilege to appear before this important Committee. I see among the distinguished representatives numerous old friends with whom I have worked

at previous conferences and many new friends whom I have first had the good fortune of meeting at this Conference.

I would like to preface my remarks concerning the Fishery Articles and the work of this Committee by joining previous speakers in congratulating our eminent Chairman on his election to that post. Mr. Chairman, the Conference with unanimous voice has given you the very important and responsible task of guiding this Committee to a successful conclusion. I assure you of the support and confidence of my delegation.

Our deep appreciation and congratulations are also extended to the International Law Commission for its monumental, painstaking, and imaginative work in compiling the draft articles, involving codification and progressive development of the Law of the Sea, a vital and important part of which is the concern of this Committee. The ILC's thoughtful consideration of the complex problems involved is reflected in both the Articles themselves and their attendant commentary.

My country is very much interested in these Fishery Articles. From its earliest days fishing on the high seas has been an important activity. In Colonial times the fisheries of the Northwest Atlantic supplied an important part of the food and commerce of the people of New England. Later the fishing industry spread to the Pacific Coast, Alaska, and the Gulf Coast of the United States. Today the fisheries occupy an important place in the economy of our coastal areas.

In the early years of my country, the industry was small and the techniques used relatively simple. But, the number of boats and fishermen and efficiency of methods used in harvesting certain fish stocks increased rapidly, and early in the present century declining yields were apparent. It became apparent that if the decline were to be halted and the yields restored, conservation measures would be necessary. In fisheries where both United States fishermen and the fishermen of other states were operating it was necessary to develop a cooperative program of research and regulation. Recognition of this need led to a number of international conservation conventions which provided for cooperation among the interested states, thus combining their efforts and scientific talents. These conventions proved very successful. They resulted in the discovery of the causes of the decline in yields and the formulation of measures to restore the productivity of the resources and the yield of the fisheries. These successes led to formulation of additional agreements of this kind to other fisheries in the world, such as the North Atlantic, as the need arose. Some of the most noted of the older conventions are those for fur seals, halibut, and salmon.

Recent years have seen a large increase in the intensity of fishing and efficiency of fishing methods in all parts of the world. This had led to a growing demand for adoption of suitable conservation procedures on a worldwide basis. Recognizing this growing interest in the conservation of fisheries, the United Nations in 1955 convened at Rome "The International Technical Conference on Conservation of the Living Resources of the Sea." The conclusions of this Conference drew heavily upon experience deriving from the numerous successful international fishery conventions. Since the ILC fishery articles we are to consider here are based to a large extent on these conclusions, these articles, with a few exceptions, reflect extensive practical experience in international cooperation in restoring and maintaining the productivity of international fishery resources.

It is accepted that the optimum or maximum sustainable yield from a stock of fish cannot be obtained if the stock is fished so intensively or with such methods that the young fish do not grow to the optimum size, or the number of mature fish is too small to produce an adequate number of young. For many stocks such as salmon, halibut, and fur seal, it has been clearly shown that uncontrolled fishing or killing will seriously reduce and perhaps destroy the stock. If the productivity of these species or stocks is to be maintained, the fishing effort must be controlled. This conclusion is widely understood and accepted.

On the other hand, in recent years the study of numerous stocks of wild animals, animals on land as well as animals of the sea, has clearly demonstrated that over-regulation can also reduce the yield and waste the productivity of the stock.

It is the proper balance of these two considerations, adequate regulations but not over-regulation, that will provide the optimum or maximum sustainable yield from a resource. This has led to the modern concept of conservation which was adopted by the Rome Technical Conference on the Conservation of the Living Resources of the Sea and is reflected in the definition included in Article 50 of the ILC draft.

It is our understanding that the ILC articles, taken together, are intended to constitute a system of rules designed to regulate the exercise of freedom of fishing on the high seas in the interest of making possible the maximum sustainable supply of food or other useful products from the sea. They should provide a happy balance between under-regulation, which endangers the continued productivity of the resources, and over-regulation, which wastes them, at a time when rapidly growing population demands ever-increasing amounts of food, and technological developments pose a greater challenge to the continued productivity of certain marine resources.

To this end the Articles would encourage:

- (1) Restoration of resources presently overfished;
- (2) prevention of overfishing in the future;
- (3) full utilization of currently underutilized resources.

Articles 51 to 59, by charging states with certain new responsibilities for applying conservation measures and for cooperating with other states, and by creating certain rights and establishing certain interests, seek to facilitate the formulation and administration of conservation measures and make use of the combined skills of the fishery scientists of all the interested states. Such cooperation is necessary if the potential yield of living resources of the sea is to be realized for the benefit of mankind.

You will note that among the responsibilities, rights, and interests set forth in these articles are:

- (1) The responsibility of a state fishing high seas resources to apply the conservation measures which are found necessary;
- (2) the responsibility of states exploiting a resource to cooperate with each other in developing and applying conservation measures which are found necessary;
- (3) the responsibility of a state when entering an established high seas fishery to observe all bona fide conservation measures applicable to that fishery;
- (4) the special interest of the coastal state in the maintenance of the productivity of the resources in high seas areas adjacent to its coast, whether or not its nationals fish such resources, and the consequent right to participate on an equal footing in any conservation program concerning these resources;
- (5) the right of a coastal state unilaterally to apply conservation measures to a stock of fish in areas of the high seas near its coast in certain urgent situations;
- (6) the responsibility of states to utilize a specific ad hoc procedure, involving some of the elements of fact finding and arbitration, to resolve certain types of disputes which might arise under the fishery articles, when these disputes are not settled by some other accepted procedure.

My Government has studied these concepts with great care and is of the opinion that, with one exception, each is an important element in the system of rules which we seek to formulate. The exception to which I refer is the concept set forth in Article 55. Regarding this concept, the United States has some question as to its necessity in view of the provisions in other articles. We will be interested in hearing the views of other delegates, however, and in exploring the problem with them.

We have heard arguments advanced by a previous speaker for control by the coastal state over fishery resources in a broad band of water adjacent to its coast. I would like to direct a few comments to the rationale advanced in support of this thesis. In view of the great amount of work facing this committee and the limited time available, I will omit my comments to two of the conclusions he has sought to develop.

First, with regard to the relation of the land to the productivity of the sea, geochemists generally agree that the soluble nutrient salts in the ocean which are essential to plant and animal life, were leached originally from the earth's crust. Over millions of years these nutrients have been carried by the rivers into the ocean where they now form the main source of fertility of seawaters.

In the lighted surface layers where the plant life grows, the nutrients would be quickly exhausted if they were not for the

system of exchanges between the deeper and surface layers. In the high latitudes the cold water being heavier sinks into the deeps and spreads widely throughout the ocean basins, thus circulating the nutrient-rich deep waters. These enriched waters are brought back up into the lighted layers again by various processes such as "winter overturn," upwellings and interactions between currents. Where they come to the surface, whether in mid-ocean or in coastal waters, the plankton and fish concentrate in unusual abundance. Rivers also make some contribution to the surface nutrients. A great river like the Mississippi influences the productivity of a limited area around its delta. Along arid coasts with only a few small rivers the influence is correspondingly less. In any event, the contribution from the drainage from the nearby land is a very small proportion of the contribution from upwelling and oceanic currents, particularly along coasts with little rainfall.

Indeed, it has been estimated that the sea contains 20,000,000 times as much dissolved salts as are brought to it each year by all the rivers of the world.

It has been argued that jurisdiction over the fishery resources should go to the people of the land from which come the nutrients which support these resources. If this philosophy were applied in accordance with the best scientific data available, it would place most of the resources along any coast under the jurisdiction of many nations both near to and thousands of miles from the resource.

Second, with respect to the effect of fishing on certain stocks of fish, reference was made to the effect of fishing on local halibut stocks in the North Pacific in the years before 1910 as an illustration of the danger of exhaustion of resources by fishing. This happened long before the conservation principles we are now considering had been developed. Since that time, Canada and the United States, working together in the North Pacific Halibut Commission, have carried out a conservation program which has restored the yield of the halibut stocks to the same or higher levels than existed in the early years of the fishery. We anticipate that by continuation of this program, the current yield can be maintained and possibly even further increased. It has also been suggested that the yield of the tuna stocks in the eastern Pacific Ocean has been diminished by overfishing. These tuna stocks are under comprehensive and continuing study by the Inter-American Tropical Tuna Commission to assure that necessary conservation measures will be applied if and when needed. Evidence which the Commission has obtained indicates that fishing has not decreased the sustainable yield of either yellowfin or skipjack tuna, which make up practically the entire catch. On the contrary, it indicates that the yellowfin is being fished somewhat below and skipjack greatly below the optimum amount.

Tuna continues to be abundant on the older fishing grounds during the usual seasons as in past years. The wide range of the tuna fleet is required to find tuna concentrations which shift with the seasonal movements and migrations of the fish. Without such a range the supply of tuna would be highly irregular and seasonal and result in much higher costs of production and processing.

I return now to the proposals of the International Law Commission. It is our view that these proposals provide a sound basis for the work of this committee. A great deal of work lies ahead of us, work in which the scientific and technical knowledge of the experts on fishery conservation and administration should be of the utmost value. It is to this work that I now address myself.

It is the view of my Government that if we are to have an adequate system of rules regarding the conservation of the living resources of the sea, certain of the proposals of the International Law Commission must be elaborated upon to a limited extent and certain new rules added to meet outstanding problems.

The Commission's proposals regarding the settlement of disputes, which proposals the United States considers of great importance, require more precise definitions to assure that they serve the purpose for which they are designed. A suitable procedure for the settlement of disputes to insure the effectiveness and proper use of Article 53, for example. An obligatory, speedy and decisive review of the material facts to determine whether or not the conditions exist which justify the actions required by the article, appears to be the only way to prevent long delays in applying necessary conservation measures in the event agreement is not reached. Articles 57, 58 and 59 are intended to provide this review.

However, in the view of the United States, these articles are deficient primarily because they do not prescribe sufficiently precise limits regarding the nature and scope of disputes to be dealt with, and because they do not lay down sufficiently clear standards to guide the commissions in reaching their determinations. My Government is of the opinion that suitable criteria must be made an integral part of the articles on arbitration if the articles are to be practicable. When we come to consider these articles in detail, the U. S. Delegation will have some suggestions to make in this regard, as well as suggestions regarding the composition of the arbitral commissions.

One new element which my Government considers essential to the fulfillment of the objectives of the articles is a rule regulating the exercise of the freedom to fish in order to encourage states to undertake conservation programs.

The new element, which has been termed "abstention," is a procedure which would provide an incentive to states to build up, or restore and maintain the productivity of stocks of fish under certain special conditions.

In certain situations the lack of such incentive may well lead to inadequate or in some situations a complete absence of conservation procedures, and thus to drastically reduce productivity of stocks of fish.

The development of such a procedure has become increasingly important and urgent with the increasing range of fishing fleets which presents new problems, and with developments in fishery science which show promise of providing means of enlarging certain fishery resources through the improvement of conditions for spawning and early survival, stocking of new areas, and other constructive measures.

The "abstention" concept was proposed by the United States to the ILC in its comments on the 1955 report on the regime of the high seas. It would provide:

- (a) where the nationals of one or more states are fishing a stock of fish with such intensity that an increase in fishing effort will not result in a substantial increase in the yield which can be maintained, and
- (b) where the maintenance of current yield or when possible the increasing of it is dependent upon a conservation program carried out by the said states, involving research and involving limitations upon the size or quantity of the fish which may be caught, then
- (c) states whose nationals are not fishing the stock regularly or which have not theretofore done so within a reasonable period of time, excepting a coastal state adjacent to the waters in which this stock occurs, shall abstain from fishing such stock.

Disagreement which may arise as to whether or not a stock of fish qualified for abstention could, of course, be dealt with in the manner contemplated in Articles 57, 58, and 59.

Finally, the ILC articles should be supplemented in another very important respect. A rule should be formulated which would clarify the manner in which measures promulgated by a State or States will be enforced when they become applicable to the fishermen of other States, as under Article 53 for example.

My Delegation will comment on this more fully at a later stage in the discussions.

In summary, my Government believes that with the modifications which I have outlined, the International Law Commission's proposals will constitute a new and effective system for the conservation of living resources of the high seas. Much of the substance of these proposals reflects practices now followed by States under international conventions. To a high degree these proposals are well tested, practical concepts which will be useful in dealing with all types of fishery conservation problems, problems involving highly mechanized fishing fleets, as well as small vessels and less complicated methods of fishing. The proposals constitute a real advance in the interest of mankind in our efforts to find satisfactory solutions to international fisheries conservation problems.

My Delegation is hopeful that further careful study by this Committee of these articles and the indicated modifications and additions will lead to agreement on a much needed system of rules regarding conservation.

There may be problems involving special economic circumstances which deserve recognition in international law. The International Law Commission referred to one of these possibilities in its comments to Article 59 in connection with

instances "where a nation is primarily dependent on the coastal fisheries for its livelihood," concluding that it was not in the position fully to examine its implications and the element of exclusive use involved.

GENERAL AGREEMENT ON TARIFFS AND TRADE

REPORT ON TWELFTH SESSION AT GENEVA: Contracting parties to the General Agreement on Tariffs and Trade ended their Twelfth Session November 30, 1957, at Geneva. At this session they completed action on a number of important trade issues and began a thorough examination of the Treaty Establishing the European Economic Community (EEC), which is also known as the European Common Market Treaty.

Among topics discussed this year were several programs for economic integration, of which the EEC was the most important. In addition the following were discussed: restrictions on imports maintained to protect foreign exchange reserves; complaints of actions contrary to the provisions of the General Agreement; requests for waivers of obligations and reports on waivers granted in the past; special problems of trade, such as those peculiar to trade in primary commodities; and customs regulations.

European Economic Community: The EEC Treaty was signed by France, Italy, the Federal Republic of Germany, Belgium, the Netherlands, and Luxembourg in March of this year. The process of ratification by the six countries was nearly completed, and it was expected that the Treaty would become effective January 1, 1958. During a transitional period of 12 to 15 years, the six nations are to remove substantially all internal barriers to trade among themselves and move toward a common external tariff toward the rest of the world so as to arrive at a complete customs union at the end of that period.

The historical importance and economic significance of the formation of the EEC was recognized; and it was also pointed out that certain problems might arise for the trade of non-member countries in the course of implementation of the Treaty.

The examination covered particularly the arrangements provided for in the EEC Treaty with respect to tariffs, the use of quantitative restrictions for balance-of-payments reasons, trade in agricultural products, and the association with the EEC of the members' overseas countries and territories, chiefly the African territories of France and Belgium.

The Contracting Parties decided that the Intersessional Committee should continue the work started at this session in close cooperation with the institutions of the EEC. Because of the importance of the subject, all General Agreement countries will be represented on the Intersessional Committee during the period between the Twelfth and Thirteenth Sessions, although normally the committee is composed of delegates of about half of them. The committee is scheduled to meet on April 14, 1958, further to consider EEC Treaty questions. It will report to the Contracting Parties at their Thirteenth Session in the fall of 1958.

European Free-Trade Area: In action on another aspect of European economic integration, the Contracting Parties agreed that the Intersessional Committee should follow developments with regard to the proposed European Free-Trade Area presently being negotiated in Paris. The FTA would associate the United Kingdom and other member countries of the Organization for European Economic Cooperation (OEEC) with the six-nation EEC. The United States is an associated country of the OEEC and activities of the Organization but is not a prospective member of the proposed European Free-Trade Area. A free-trade area differs from a customs union (such as the EEC) in that, while both eliminate internal restrictions, only the customs union has a common external tariff. Each member of a free-trade area maintains its own tariffs against imports from non-members.

Consultations on Balance-of-Payments Restrictions: The Contracting Parties completed a series of consultations on quantitative import restrictions imposed for

balance-of-payments reasons. Twenty-one countries consulted on such restrictions, which they maintain in accordance with an exception to the general rule in the General Agreement against quotas.

This program of consultations, the first stage of which was held in June, was initiated as the result of a United States proposal accepted by the Contracting Parties at their Eleventh (1956) Session. Because of amendments to the General Agreement which recently came into force for most countries, such consultations will, beginning in 1959, be held annually for industrialized countries and every other year for less-developed countries.

A number of measures to eliminate import quotas were announced during the consultations, and there was broad agreement that the use of sound internal monetary and fiscal measures can frequently avert the need to resort to quantitative restrictions when faced with balance-of-payments difficulties. As a result of the consultations, it was agreed that Germany was no longer entitled to maintain quantitative restrictions for balance-of-payments reasons. The German delegate presented a statement at the Twelfth Session describing the program his government intended to follow for eliminating balance-of-payments restrictions.

The Contracting Parties extended for one year a 1955 decision to permit a country whose balance-of-payments situation had improved to such an extent that it no longer justified retention of quantitative controls on imports to maintain some of those controls on a decreasing basis and over a limited time. The decision was taken to permit such countries to ease the effect of a sudden withdrawal of such controls on domestic industries.

New Contracting Parties: At the Twelfth Session Ghana and the Federation of Malaya, which acquired their independence in 1957, became the 36th and 37th contracting parties to the General Agreement.

With a view to becoming a contracting party, Switzerland will conduct tariff negotiations with most of the present contracting parties. It was agreed that the negotiations would take place in Geneva in 1958. The United States will not participate in the negotiations, but will maintain reciprocal tariff concessions outside the General Agreement with Switzerland under a long-standing bilateral trade agreement.

Japan has now been a contracting party for over two years, but 15 General Agreement countries continue to invoke a provision (with respect to Japan) which permits a contracting party to withhold application of the General Agreement from a new contracting party. The problem of Japan's trade relations with the 15 countries was given further attention at the Session. The United States and several other countries supported Japan's request that the General Agreement be made applicable between Japan and the 15 countries. Brazil, which had invoked this provision when Japan became a contracting party, reported that it is now applying the General Agreement fully toward Japan.

Tariff Adjustments: General changes in tariff schedules by four countries were discussed.

Brazil, which was granted a waiver last year to permit it to revise its tariff, will conduct negotiations with other contracting parties on the basis of its revised tariff early in 1958. The object of the negotiations is to give other contracting parties an opportunity to negotiate for concessions to replace those which Brazil is modifying or withdrawing as a result of the introduction of its new tariff.

Cuba requested at the Twelfth Session a waiver of certain of its obligations under the General Agreement to facilitate the introduction of a revised tariff. The

Cuban request was made on the basis that the tariff was antiquated and that a revision was necessary for the development and diversification of the Cuban economy. The Contracting Parties agreed to take account, in negotiations based on the new Cuban tariff, of the principle that a country which has bound a high proportion of its tariffs at very low rates of duty has less scope for negotiating. The Contracting Parties also granted Cuba a waiver to permit it to impose quantitative restrictions on imports to the extent necessary to forestall a flood of imports during the period before the new tariff becomes effective.

Certain adjustments will be made in the New Zealand tariff to modernize it. Where such adjustments result in increases of bound duties, New Zealand will negotiate the increases by giving equivalent new concessions to those countries most closely affected.

Since the end of 1957 marks the end of a period of about three years during which contracting parties agreed not to withdraw tariff concessions, several countries initiated negotiations to permit them to raise tariffs which they had previously bound. These negotiations were held in part concurrently with the Twelfth Session. They will result in new tariff concessions to balance those withdrawn. A new period of three years during which concessions may not normally be withdrawn will begin the second of January.

Complaints: The Contracting Parties considered several complaints that countries were not fulfilling their General Agreement obligations.

Delegates of France and Brazil reported that their governments had taken the necessary action to remove certain taxes which were inconsistent with the General Agreement. The Contracting Parties took note of a French statement of its intention to reduce a tax which had been increased contrary to the General Agreement.

Restrictive Business Practices: In consideration of a Norwegian proposal that the Contracting Parties draw up a supplementary agreement for the control of international restrictive business practices (cartels), the Contracting Parties directed that their Executive Secretary prepare a report on cartels and on national anti-trust legislation. The report will be presented to the Intersessional Committee, which will then decide what further action should be taken, if any, on the matter.

Trade and Customs Regulations: The Contracting Parties adopted a recommendation on consular formalities designed to facilitate trade by eliminating unnecessary procedures. The Contracting Parties agreed to consider at the Thirteenth Session a draft recommendation on marks of origin. Action on the subject of determining the nationality of imported goods was deferred to the Thirteenth Session.

Amendments: Shortly before the opening of the Session, amendments to the preamble and Parts II and III of the General Agreement, which had been negotiated in 1955, became effective for those countries which had accepted them, including the United States. The Contracting Parties took a number of actions as a result of the amendments coming into force, and recommended that certain other protocols and the Agreement on the Organization for Trade Cooperation be accepted and brought into effect.

Next Meeting: The Contracting Parties agreed to meet for their Thirteenth Session on October 16, 1958. (U. S. Department of State press release of December 5, 1957.)

JAPANESE-RUSSIAN FISHERIES NEGOTIATIONS PROGRESS REPORT

Japanese negotiations with the Soviets covering the salmon catch quota and other problems for the 1958 season have only emphasized the wide divergence in views held by the two countries. Since the Japan-Soviet Fisheries Commission meeting opened in Moscow on January 13, 1958, the Japanese made little progress toward reaching an agreement on the 1958 salmon catch quota, and Soviet proposals such as those affecting the length of the fishing season, the off-limit fishing areas, fishing in the Okhotsk Sea, and others have given ample evidence of the Soviet desire to limit seriously Japan's fishing operations in the convention area. In apparent anticipation of the likelihood that once the current talks reach a deadlock a political solution may be necessary, consideration is now being given in the Japanese Government to despatching from Japan someone of ministerial caliber.

As anticipated, Japanese delegates to the Japan-Soviet fisheries Commission meeting which commenced in Moscow on January 13, 1958, have been able to make little progress toward reaching an agreement on the 1958 salmon quota, and on other points of major difference between the negotiating parties. The following summarizes Japanese requests and Soviet requests, as revealed by the press and industry sources, as of February 7, 1958.

1958 SALMON CATCH QUOTA: The Japanese have requested a quota of 145,000 metric tons for the 1958 season, a figure which is lower than the 165,000 metric tons requested at the opening of the 1957 negotiations. The slightly lower Japanese request for 1958 is reportedly due to a recognition that since the salmon catch for 1957 was good, the 1958 season is likely to be bad. Although the Soviets have made no counteroffer, some Japanese industry sources believe that the Soviets are attempting to lower the quota for 1958 to 80,000 metric tons, a figure reportedly agreed to in the Kono-Ishkov talks concluded in May 1956 for years when the fish catch is expected to be bad. The 1957 quota was 120,000 metric tons.

PERIOD OF FISHING SEASON: Countering the Japanese request that the salmon fishing season should be extended from August 10--which was in effect during 1957--to August 20, the Soviets have asked that the fishing season be ended on July 31. It might be noted that Japan had a very successful fishing season last year and the agreed quota was met by July 20. The Soviet delegate has argued that salmon caught after July 31 in other years included immature fish and that this was a waste of salmon resources. The Japanese have admitted that some immature fish are found among the chum, red, and silver salmon caught after July, but they have contended that the number was insignificant.

OFF-LIMIT FISHING AREAS: During 1957, Japanese fishing vessels were required to make their catches 40 nautical miles from the Soviet coast, including the Soviet-claimed Kurile Islands and the Komandorski Islands, in areas north of 48 degrees north latitude, and 20 nautical miles out in areas south of that line. The Japanese, in the interest of maximizing their fishing catch, have requested that the three-mile territorial limit should be recognized, that salmon fishing should be permitted beyond 12 miles from the coast, and that the area between three miles and 12 miles should be open to small vessel operations. To counter the Japanese position, the Soviets reportedly have requested that Japanese fishing be restricted to areas outside a distance ranging from about 40 miles to 60 miles from the Soviet coast. The Soviets are said to be concerned particularly about Japanese fishing operations near the river mouth where the salmon ascend for spawning and along the fishing ways between Kurile Islands where the Japanese fleets have made heavy salmon catches.

OKHOTSK SEA FISHING: Under the 1957 agreement the Japanese caught 13,000 metric tons of salmon in the Okhotsk Sea. The Soviet delegates reportedly have served notice to Japanese delegates to the Convention meeting that they are interested in prohibiting altogether Japanese fishing in the Okhotsk Sea, including areas west of the Kurile Islands. The Japanese have not replied formally to this Soviet proposal, but their position appears to be that they find the proposal unacceptable.

DRIFT NET AND LONG LINE FISHING: In the tenth session of the science and technology subcommittee held on February 4, the Soviet delegate reportedly proposed (1) that drift-net fishing operations for all vessels operating south of 48 degrees north latitude be limited, (2) that long-line fishing operations be limited to areas south of 42 degrees north latitude, and (3) that the meshes of fishing nets and net thread should be enlarged. According to the Japanese press, the Soviet delegate in the following day's meeting indicated a willingness to ease some of the restrictions proposed the previous day. On drift-net fishing, the press reports that the Soviets indicated that restrictions were intended only on large drift-net fishing vessels. On long-line fishing, they indicated a willingness to retract their proposal that restrictions be applied to areas south of 42 degrees north latitude. Current restrictions apply to fishing vessels operating south of 45 degrees north latitude.

The Japanese position on drift-net and long-line fishing operations has not been revealed as yet. It is obvious, however, that Japan is against any form of restriction which can not be proven necessary by conservation requirements.

SALMON FISHING LIMITATIONS BY SPECIES: In the face of Japan's well-publicized objection to any limitation of the salmon quota by species of fish, the Soviet delegate in a meeting on February 5 is reported to have proposed that Japan's salmon catch should be limited by species on the basis of the following percentages of the total agreed quota: pink salmon--60 percent; chum or dog salmon--25 percent; red salmon--10 percent; and other species of salmon--5 percent. Japanese negotiators reportedly are opposing this proposal strongly on the basis of the fact that even if quotas for each species of salmon should be established, it would be impossible to implement. Japanese objection to the Soviet proposal stems primarily from the sharp limitation proposed for red salmon, which is commercially the most important type of salmon exported by Japan. It is to be noted also that Japan's annual catch of red salmon is estimated to range from about 18 percent to 35 percent of Japan's total annual salmon catch.

CONCLUSION: With each new report from Moscow on the progress of Japan's negotiations with the Soviets on salmon fishing for the 1958 season, there is increasing evidence that the gap between the two countries' position is too wide to be bridged by the delegates. Undoubtedly in recognition of this trend in the negotiations, the Minister of Agriculture, Forestry and Fisheries, in a meeting with the Japanese Cabinet on February 4 is reported to have indicated that Japan's negotiations with the Soviets will come to a deadlock about the middle of March 1958 and that in order to overcome this expected stalemate Japan will be required to send to the Convention meeting someone of ministerial caliber.

Talks on crab and herring fishing operations, as well as safe fishing operations in the northwest Pacific, have not been taken up as yet by the delegates to the Convention meeting, but it might be anticipated that negotiations on these issues will serve only to emphasize the divergence of views between the two countries.

INTERNATIONAL FISHERIES TRADE FAIR

DENMARK TO HOLD THIRD FAIR IN 1959: As a result of the success of the first two International Fisheries Trade Fairs, a 3rd International Fisheries Trade Fair will be held in Copenhagen, Denmark, from September 25 to October 4, 1959. The first two International Trade Fairs (held in May 1956 and September 1957) were visited by buyers from more than 33 countries.

In order to meet the aim in accumulating for exhibit as many items as possible of up-to-date technical development and invention, there will be an interval of two years between the 2nd and 3rd International Fisheries Trade Fairs. On the strength of this, the 3rd Fair will be considerably more comprehensive than the preceding ones, as this exhibition will comprise a wide range of accessories for trawlers and even larger ships.

The development of this field is so rapid and so closely connected up with the fisheries trades that it is appropriate to invite all manufacturers and distributors of ship's accessories to take this opportunity of presenting their latest products, states a January 1958 release from the Press Secretariat, The International Trade Fair.

WHALING

ANTARCTIC WHALE CATCHDOWNS AS OF FEBRUARY 15, 1958: The 1957/58 catch of whales by the Antarctic whaling fleet was lower than last season and forecasts were that the season would end March 22, 1958, 6 days later than the season ended in 1957. As of February 22, 1958, a total of 10,227 blue-whale units had been taken, as compared with 11,575 at the same time a year ago (Foreign Crops and Markets, U. S. Department of Agriculture, March 17, 1958).

Production of Whale Oil by Country in the Antarctic as of February 15, 1956/57 and 1957/58 ^{1/}		
Country	Production	
	1957/58	1956/57
	. (Long Tons) . .	
Norway	62,000	89,000
Japan ^{2/}	58,000	50,000
United Kingdom	35,000	42,000
Netherlands	9,600	8,600
U. S. S. R.	3/	3/
Total	164,600	189,600
^{1/} PRELIMINARY ESTIMATES		
^{2/} INCLUDES PRODUCTION OF EX-ABRAHAM LARSEN, WHICH WAS UNDER FLAG OF THE UNION OF SOUTH AFRICA IN 1956.		
^{3/} NOT AVAILABLE.		



Australia

TUNA LANDINGS GOOD OCTOBER-NOVEMBER 1957: From mid-October to mid-November 1957, the canneries at Narooma and Eden, New South Wales, received about 450 long tons of tuna, processing the bulk of the fish at Narooma.

The greatly increased rate of processing was possible by the installation at Narooma of modern packing equipment. On one shift a day, employing 40 women and 20 men, Narooma packed 10 tons of fish daily and could have packed more if the fish had been larger. However, later, tuna were being taken up to 40 pounds each.

Up to mid-November, Bermagui was the center of the tuna fishing, with about 18 boats operating, including the well-known clipper Fairventure. The manager of the Bermagui South Fishermen's Cooperative stated that one 57-pound southern

bluefin tuna had been taken, and that fishermen had harpooned a 167-pound fish which had been swimming around in the Bay.

While Narooma was taking care of the tuna catch, the cannery at Eden was processing Australian salmon (Arripis trutta) and some of the tuna (the December 1957 Fisheries Newsletter, issued by the Commonwealth Director of Fisheries).

NOTE: ALSO SEE COMMERCIAL FISHERIES REVIEW, FEBRUARY 1958, P. 58; DECEMBER 1957, P. 58; NOVEMBER 1957, P. 48; JUNE 1957, P. 38.



Austria

WHALESKIN TEST PLANT PLANNED: A testing plant in Austria for the utilization of whaleskin for industrial purposes is a possibility. The project reportedly has the approval of several Austrian Government agencies, but financing is lacking.

A civil engineer for chemistry at the skin fiber catgut factory in Villach, Austria, claims to have developed a method of utilizing a basic material disregarded thus far--whaleskin--which can be applied to a number of industries throughout the world.

He is primarily interested in improving production methods by experiments for the industrial utilization of whale fat. He indicates that his method, based on scientific experience, increases blubber output 30 to 40 percent.

The chemical process can be carried out directly on the factoryships and requires neither equipment nor expenditure. The blubber reportedly is deodorized in one operation and prepared for immediate consumption and processing. The degreased raw material is a basic substance for the development of several interesting products, according to the engineer.



Brazil

JAPANESE VESSEL LANDS TUNA AT BAHIA: The Japanese fishing vessel Kayko Maru landed 100 tons of frozen tuna at the Brazilian port of Bahia on March 2, 1958. The tuna were to be sold for local consumption, according to a March 7, 1958, dispatch from the United States Consulate in Bahia.



Canada

BRITISH COLUMBIA HERRING CATCH FOR 1957/58 SEASON: The herring catch off the coast of British Columbia in the 1957/58 season totaled 84,335 tons, a decrease of 53.1 percent from the 179,943 tons reported for the 1956/57 season. The catch was also down from the average catch for the preceding six-year period 1951-57 by about 57.2 percent.

The utilization of the herring landings was not announced as less than three companies operated in the 1957/58 season, according to a March 19, 1958, release from the Canadian Department of Fisheries. Landings of herring in the 1957/58

British Columbia Herring Catch 1957/58 Season with Comparisons							
Season Ending:	Mar. 15, 1958	Mar. 16, 1957	Mar. 10, 1956	Feb. 12, 1955	Mar. 27, 1954	Mar. 15, 1952	Mar. 17, 1951
	(Tons)						
District No. 2:							
Northern	11,286	31,004	11,055	20,281	31,002	57,336	50,638
Central	14,965	36,213	50,084	27,613	32,607	39,911	51,314
Queen Charlotte Is.	13,774	29,089	92,637	21,625	28,440	11,182	3,138
District No. 3:							
Lower East Coast	18,284	43,389	48,978	51,130	53,050	40,308	41,003
Middle East Coast	9,932	20,001	30,156	25,740	20,087	10,369	12,073
Upper East Coast	3,470	15,045	951	9,529	6,326	8,242	3,773
West Coast	12,624	5,202	19,535	14,201	40,120	29,991	25,244
Total	84,335	179,943	253,396	170,119	211,632	197,339	187,183

season were curtailed sharply due to a dispute between processors and the fishermen over prices to be paid for herring for reduction during the months of November and December 1957.



Chile

Chilean Catch of Fish and Shellfish, 1955-57			
District	1957	1956	1955
 (Metric Tons)		
Fish:			
Iquique	20,054	14,977	15,980
Antofagasta	12,531	6,122	7,622
Coquimbo	5,096	5,167	4,150
Valparaiso	14,931	16,599	22,746
San Antonio	29,540	31,665	49,593
Talcahuano	59,510	47,867	50,625
Valdivia	2,221	2,561	3,180
Puerto Montt	13,449	16,838	15,830
Total fish	157,332	141,796	169,726
Shellfish:			
Iquique	651	387	331
Antofagasta	199	160	74
Coquimbo	5,509	3,712	2,404
Valparaiso	8,199	5,924	3,337
San Antonio	784	213	172
Talcahuano	2,740	2,231	1,996
Valdivia	2,035	1,551	1,468
Puerto Montt	35,652	32,352	34,822
Total shellfish	55,769	46,530	44,602
Grand total	213,101	188,326	214,328

LANDINGS OF FISH AND SHELL-FISH, 1955-1957: The total catch of fish and shellfish reported from the eight Chilean fishing districts amounted to 213,101 metric tons in 1957, only 1,227 tons below the 214,328 tons reported for 1955. The 1957 catch was about 14 percent higher than the 1956 landings of 188,326 tons. The landings in seven of the eight districts increased in 1957 as compared with 1956. The exception was Puerto Montt, in which landings were down about 90 tons in 1957, the United States Embassy in Santiago reported in a March 5, 1958, dispatch.



Colombia

BAIT AND TUNA FISHING BY FOREIGN VESSELS PERMITTED:

It is understood that Article 30 of new Colombian Decree 0376 provides for issuance of permits to foreign fishing vessels for the taking of whales, tuna and live bait.

The Ministry of Agriculture has been empowered to set the fees for these permits.

If the fees are reasonable this should open another area for United States tuna boats and furnish additional revenue for the Colombian Government. For some time prior to this relaxation of restrictions on fishing, foreign flag vessels were not permitted to take bait or to fish for tuna in Colombian waters, according to a February 3, 1958, dispatch from the United States Embassy Regional Fisheries Officer in Mexico City.

Cuba

CLOSED SEASON FOR SPINY LOBSTER BEGINS MARCH 30: The closed season for spiny lobster was set for March 30, 1958, instead of the originally-scheduled date of March 15, 1958, according to a Cuban National Fisheries Institute (INP) press release. The change was made at the request of fishermen in the La Coloma and other lobster areas and was approved by INP technical personnel. The fishermen, on their part, have promised to release any spiny lobsters which are in spawning conditions or which are below the legal minimum.

The INP advises that in accordance with current regulations all persons having in their possession live or frozen lobsters on March 30, 1958, have a period of five days to dispose of them, after which it will be considered an infraction of law, punishable by fine, to have in storage or transit any live or frozen spiny lobsters (United States Embassy in Havana, March 17, 1958).



Denmark

FAROE ISLANDS EARN REVENUE FROM RUSSIAN FISHING FLEET: A Danish commercial-financial newspaper reported early in March 1958 that the Russian herring fleet fishing off the Faroe Islands (on a practically year-round basis) paid the Faroese authorities about US\$29,000 in 1957. The receipts were derived from port charges and fresh-water supplies. In return the Russian vessels have supplied the Faroe Islands fishing fleet with bait herring in return for manila twine or rope.

The Russian fishing fleet of about 250 vessels operating off the Faroe Islands obtains its entire water supply from the Islands. The water is transported in special tankers to the Russian fleet.



France

TUNA INDUSTRY EXPANDS: The development of the tuna fishery off the coast Dakar, French West Africa, and particularly, the success of the May 1956-May 1957 tuna-fishing season in West African waters, has contributed to the increase in France's 1956 tuna catch of 40 percent above the total average catch for the period 1951-55. Since the West African catch was used entirely for canning, French canned tuna production in 1956 increased 60 percent over the average production for the period 1951-55. The following data covers the catch, canning, and marketing of French-caught tuna:

The tuna fishing season in the waters off the French mainland is May to November. In 1956, the catch of white or albacore tuna (*Germe alalunga*) and red or bluefin tuna (*Thunnus thynnus*) in the Atlantic and Mediterranean amounted to 16,696 metric tons, priced at an average of about 254 francs a kilo ex-vessel.

The tuna fishing season off the West African coast is November to March. In 1956/57, 5,797 tons of tuna were utilized by France and Dakar.

The total landings of tuna during the 1956/57 season was approximately 21,500 tons as compared with 17,350 tons for 1955/56. This was an increase of about 5,000 tons or 40 percent.

The principal French tuna fishing ports by order of importance in 1956/57, were as follows: San Juan de Luz, with a catch of 9,058 tons; Concarneau, 2,830 tons; Sables-d'Olonne, 1,864 tons; and Douartenez, 1,297 tons.

The canning industry used 17,400 tons of tuna in 1956 as compared with 13,100 tons, the average for the years 1951-55. The 17,400 tons of tuna canned represent 757,000 cases or 15,140 tons (semi-gross weight).

France's imports of canned tuna in 1956 amounted to 1,127 tons. The principal sources were: Morocco (999 tons), French West Africa (113 tons), and Italy (15 tons).

Exports of canned tuna from France in 1956 were estimated at 300 tons. The most important customers were: Switzerland, Belgium, Venezuela, United States, Canada, and Mexico.



German Democratic Republic

MANY FISHING VESSELS BUILT FOR RUSSIA: During 1957 the total number of "logger" fishing boats built for the Soviet account by the East German "Volk-Werft" in Stralsund is reported as 112. A total of 12 boats of a larger type were built for Iceland. In October of 1957 the yard commenced building a special type of fishing boat of about the same size as the large Swedish west coast trawlers and equipped with refrigerator space.

In 1959 and 1960 the Soviet Union will take the entire production of the yard which will total 160 trawlers and 15 factoryships.

The East German shipyard in Stralsund has built 700 "logger" fishing boats in the last ten years, according to information received by the Swedish West Coast Fishermen's Central Association. The yard now employs 5,700 workers.



Greenland

TRADE COMMISSION CONSIDERS PURCHASING MODERN FISH PROCESSING EQUIPMENT: The Royal Greenland Trade Commission, with a view towards modernizing Greenland's fishing industry, has been studying the purchase of large electric fish-washing machines, United States shrimp peelers, and German cod filleting machines.

When the prospective machines were under discussion in the Folketing's Finance Committee, the Cabinet Minister for Greenland objected to their purchase, maintaining that hand peeling of shrimp (at a rate of one kilogram or 2.2 pounds per hour per peeler) could compete with machine cleaning. The Commission has nevertheless continued discussions with an American firm manufacturing shrimp peelers, after having sent a fishery biologist to Florida to study their operation. In 1957 a total of 1,473,000 pounds of shrimp were landed for canning in Greenland. Norway and Iceland have already rented shrimp peelers this year, and the Danes will decide to rent one for Greenland if the experience of earlier purchasers is satisfactory.

At present 6 electric washing machines have been purchased to clean the 30,800 tons of cod landed in 1957, and processed in Greenland.

German cod-filleting machines have been used at several factories, but inasmuch as a new model is being perfected at Lubeck, West Germany, its development is being followed with interest before further purchases are made. All machinery used in Greenland must be simple and robust because of the distance of the Island from sources of supply of machinery and replacement parts, the United States Embassy in Copenhagen states in a February 26, 1958, dispatch.



Iceland

NEW EUROPEAN COMMON MARKET AND FREE-TRADE AREA CAUSES CONCERN: The coming of a common market and the foundation of a free-trade area in Europe greatly concerns Iceland. On behalf of the Government the Minister of Industry attended the Office of European Economic Cooperation conference on the free-trade zone in Paris.

At this conference, it was decided that fish trade problems should be separated from agricultural problems--this in reference to Norwegian and Icelandic representations. This gives the hope that fish may be tariff-free inside the free-trade area, while it is now obvious that agricultural products cannot be so.

On the broad problems, Icelanders have been weighing the pros and cons of the common market and the free-trade area.

Iceland cannot possibly participate in the common market, the purpose of which is complete integration of industry in the six countries concerned. Participation would be the death blow to nearly all industry in Iceland, and create unemployment.

If Iceland remains outside the common market, the main changes in Iceland's fish exporting industry will be:

1. Greater difficulty in competing with French trawlers which catch fish on the Newfoundland Banks and sell it salted to Italy, because tariffs on French fish would be lifted in Italy.
2. Easier to sell fish in the French market. Tariffs there have so far been insurmountable, but the common tariff for all six countries will be lower.
3. The market for iced trawl fish in Western Germany will be as now, because Germans need this product badly in the autumn months, but profits will be somewhat reduced by the higher tariff.

On the other hand, the possibility of Iceland's participation in the initially British-proposed free-trade area is being freely discussed.

This organization would have a somewhat looser unity than the common market, but the Icelandic fishing industry, which has grown in the difficult climate of a small

inland market protected by strong tariff barriers certainly does not want to participate in it. It is felt that the scheme would mean the death of at least some branches of the industry even though changes were brought about gradually.

Icelanders, therefore, are asking what gains participation would bring to counterbalance any losses. On the face of it, the scheme could mean bigger and better markets in Western Europe--while, if she stays outside, Iceland may be isolated from Europe, lose markets, or face high tariffs.

The importance of the question lies in the fact that Iceland's total exports in 1957 amounted to about US\$58.4 million of which about US\$26.4 million went to countries in the European Payments Union. She naturally has no wish to lose such a market.

Against this, however, there is the huge market acquired in Eastern Europe during the past few years. Participation in the free-trade zone might cut across this trade if only on the grounds that East European industrial products taken as payment for the fish would not be able to compete with West European production.

The loss of Eastern European markets would be particularly harmful, because they buy heavily of frozen fillets.

The problem is thus narrowed to the crucial one of whether Iceland can find markets for this frozen fish in Western Europe. This might be difficult initially because only a few countries other than Sweden have an efficient system for storing and transporting frozen fillets.

Basically, the question is: Will Iceland cling to Western or Eastern Europe? An ever-larger proportion of her trade has been turning towards the Russian Block, which took 35 percent of all Iceland's exports in 1957.

Many Icelanders object to this trend and realize the political dangers which result from it. They are disturbed by the thought that, if their country cannot participate in the free-trade area the increased tariffs in Western Europe might throw her completely into the hands of the Eastern European trade block. (The Fishing News, February 14, 1958.)



Japan

TUNA LANDINGS, 1956 AND JANUARY-OCTOBER 1956-57: The 300,888 metric tons of tuna (skipjack, bluefin, albacore, big-eyed, and yellowfin tuna) landed by Japanese fishing vessels (exclusive of mothership-type and American Samoa-based

fisheries) in January-October 1957 were about 6 percent higher than the 283,940 tons landed in the first 10 months of 1956. Total tuna landings from all sources in

Type of Fishing Operations and Species	January-October		Total 1956
	1957	1956	
. (Metric Tons) . . .			
Coastal, offshore, and pelagic:			
Skipjack	94,830	94,480	98,220
Bluefin	29,430	31,630	37,010
Albacore	65,790	55,420	58,800
Big-eyed	45,770	37,100	47,190
Yellowfin	65,068	65,310	77,060
Subtotal	300,888	283,940	318,280
Mothership-type fishing	n. a.	n. a.	7,244
American Samoa-based fishing	n. a.	n. a.	5,946
Grand Total	n. a.	n. a.	331,470

N. A.: NOT AVAILABLE.

1956 amounted to 331,470 tons during the first 10 months. As compared with the first 10 months of 1956, landings for the same period of 1957 showed a 19-percent increase for albacore and a 23-percent increase for big-eyed tuna.

Reports from the Japanese indicate that tuna landings declined in the final two months of 1957 due to curtailment of fishing operations because of poor marketing prospects. Therefore, the total 1957 catch will not be as high as the

10-month 1957 landings indicate, states a February 14, 1958, dispatch from the United States Embassy in Tokyo. But the 1957 tuna landings should be at the same level as for 1956 when they totaled 331,470 metric tons (including mothership and Samoa-based fisheries).

JAPANESE GOVERNMENT



Mexico

SHRIMP INDUSTRY OBJECTS TO PROPOSED JAPANESE FISHING FLEET:

One of Mexico City's newspapers on February 17, 1958, featured an article protesting the proposal to bring a fleet of Japanese fishing vessels to catch shrimp off Mexico's west coast.

According to the newspaper, the shrimp cooperative fishermen and boat owners from the Pacific Coast protested to the President of Mexico against the bringing of Japanese vessels and crews to fish in Mexican waters. The Mexican fishermen claim that they cannot compete with the low production costs and wages of the Japanese, a February 20, 1958, dispatch from the United States Embassy in Mexico City reports.

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SHRIMP PRICE AGREEMENT REACHED FOR CAMPECHE AREA: On February 13, 1958, the cooperative shrimp fishermen and the boat owners of Ciudad del Carmen and Campeche came to terms after about two months of negotiations. The new contract (expires May 15, 1959; is retroactive to January 1, 1958) calls for an increase of 492 pesos (about US\$39.35) per metric ton (about 1.8 U. S. cents a pound) to be paid the fishermen for headless shrimp. The fishermen will now get 2,280 pesos (about US\$182.40) per ton (8.3 U. S. cents a pound) as compared with a previous price of 1,788 pesos (US\$143.15) per ton (6.5 U. S. cents a pound). Not included in these prices is the return to the boat owner and other allowances and costs borne by the owner.

The fishermen also get an increase in food allowance of one peso per day each. Each fisherman will now be allowed 8.00 pesos (about \$0.64) per day for food and

this allowance will be paid throughout the entire year. The customary crew on the Mexico Gulf coast consists of five men.

The major price features of the new contract are similar to that existing for the Pacific coast of Mexico, the United States Embassy in Mexico City reported on February 21, 1958.



Norway

WINTER HERRING FISHERY FAILURE: Reports from all along the western coast of South Norway show that the annual fisheries for the fat, mature winter herring were a dismal failure in 1958--the poorest since 1926. Most of the 26,000 fishermen who participated are now trying to recapture their lost fortunes in the spring herring fisheries. These, however, have not come off to a very auspicious start. The cost of equipping the fishing fleet of some 2,600 purse-seiners and drift netters is estimated at about US\$17.5 million. About 600,000 metric tons of herring will have to be landed to pay for the investment, and fishermen are as yet far from the half-way mark.

When the fat herring season (extended by 6 days) was called off on February 21, total landings amounted to about 241,000 tons, with a first-hand value of about US\$7.7 million. At the same time in 1957, Norwegian fishermen had landed over 680,000 tons of winter and spring herring, valued at over US\$21.8 million. By March 8 reports indicated landings of 291,448 tons as compared to 766,878 tons through that date in 1957.

Not a single fat herring has been delivered to oil and meal reduction plants in North Norway, leaving some 500 workers without any earnings. Even reduction plants near the fishing grounds received only about 130,000 tons, as compared with 400,000 tons last year. And only 42,000 tons have been salted, as against export commitments totaling 110,000 tons. Of this quantity, 42,000 tons plus 5,000 tons of spring herring was to go to the Soviet Union. Representatives of the latter country have now agreed to cut the total to 37,000 tons of mixed winter and spring herring.

The failure of the winter herring fisheries was in part due to stormy weather. But even when fishermen were able to reach the banks, catches were very poor. Yet, ocean researchers found hudge shoals both north and south of Stad, but the herring stood too deep to be reached with purse-seiners or nets. One theory is that the surface water may have been too cold for the sensitive fish. Another suggests that the mature herring may be seeking more suitable spawning grounds. It is a historical fact that the herring has alternated between Norwegian and Swedish spawning grounds for periods lasting up to 70 years. The present Norwegian period began in 1897. For the past 61 years, the herring has each winter come to spawn on the banks off the coast of West Norway.

According to a Fisheries Consultant, the former Norwegian herring period ended in 1861 with a catch of about 100,000 tons of fat herring. The following year, landings were reduced to only 10,000 tons. For a few years, insignificant quantities were caught in the Oslofjord. During 1870-74, the fat herring fisheries were in full swing off North Norway, but between 1877 and 1896 the most important fat herring runs were off the coast of the Swedish province of Bohuslan.

As late as 25-30 years ago, the spring herring fisheries were dominant along the Norwegian coast and there were actually two fat herring periods, one in October and one in January. Subsequently, these were fused into a single influx, arriving at the western Møre coast about mid-January.

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WINTER 1958 FISHERIES TRENDS: Very cold weather is believed to have hampered the Norwegian herring as well as the groundfish fisheries through February 8, 1958.

Shoals of winter herring have appeared in coastal waters between Kristiansund and Florø. The landings have, however, not fulfilled expectations. Purse seiners as well as drifters have got smaller catches than expected. As of February 8 the landings amounted to 813,865 hectoliters (75,689 metric tons) against 4,393,640 hectoliters (408,609 metric tons) at the same time last year. Of this year's landings, 146,615 hectoliters were sold for fresh exports, 179,570 hectoliters

for curing, 9,595 hectoliters for canning, and 425,835 hectoliters for reduction.

The spawning cod landings this year are far behind last year's landings. The landings amounted to 7,730 metric tons as of February 8 against 10,991 tons last year and 21,665 tons in 1956 (as of February 11). Of this year's landings, 2,051 tons were sold for drying, 2,843 tons for curing, 2,836 tons for fresh purposes, and the balance for other purposes. The landings of other kinds of groundfish were mostly light. (Fiskets Gang, February 13, 1958.)

NOTE: ONE HECTOLITER OF HERRING EQUALS 93 KILOGRAMS OR 205 POUNDS.

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POSSIBLE RUSSIAN SUPPORT FOR INTERNATIONAL FISH CONSERVATION IN NORTHEAST ATLANTIC: While answering an interpellation in the Storting, the Norwegian Minister of Foreign Affairs expressed optimism over possible Soviet cooperation in fishing conservation measures in the northeast Atlantic, according to newspaper accounts. The same source stated that the U. S. S. R. delegation which attended the London fish conservation conference last year as observers agreed at that time to the proposal to include the Barents Sea in the revision of the International Fisheries Convention of 1946.

The Barents Sea constitutes an important link in the annual migratory cycle of the cod that are fished off the Norwegian coasts in the early winter of each year. Whether or not the overtaking of the fish stocks in this area has a direct influence on the Norwegian fisheries, as alleged by the Norwegian press, is still a matter of international dispute. (United States Embassy dispatch from Oslo dated February 14.)



Portugal

CANNED FISH EXPORTS, 1957: During 1957 Portugal's exports of canned fish amounted to 58,407 metric tons (3,019,800 cases), valued at US\$35.0 million, as compared with 62,756 tons, valued at US\$37.2 million, for the same period in 1956. Sardines in olive oil exported during 1957 amounted to 40,084 tons, down 6,611 tons from 1956.

In 1957 the leading canned fish buyer was Italy with 9,991 tons (valued at US\$5.8 million), followed by Germany with 8,318 tons (valued at US\$4.3 million), England with 8,280 tons (valued at US\$4.7 million), the United States with 5,769 tons (valued at US\$4.8 million), Belgium-Luxembourg with 3,449 tons (valued at US\$2.0 million) and France with 3,415 tons (valued at US\$2.0 million). Exports to the United States consisted of 2,713 tons of sardines, 2,396 tons of anchovies, and 31 tons of tuna.

During 1957 the United States was Portugal's fourth best canned fish customer in terms of quantity (9.9 percent) and ranked second (13.6 percent) in value.

Portuguese canned fish exports in December 1957 totaled 11,611 tons (604,100 cases), valued at US\$6.6 million, as compared with 13,016 tons, valued at US\$7.3 million for the

same month in 1956. In December 1957, England was the principal buyer (2,488 tons) of Portuguese canned fish, followed by Germany, Italy, and the United States (*Conservas de Peixe*, February 1958).

Portuguese Canned Fish Exports, 1956-1957				
Species	1957		1956	
	Metric Tons	US\$ 1,000	Metric Tons	US\$ 1,000
Sardines in olive oil	40,084	23,650	46,695	26,935
Sardineline fish in olive oil	6,419	4,840	5,074	4,142
Sardine & sardineline fish in brine	1,433	353	2,030	487
Tuna & tunalike in olive oil	2,782	2,222	2,050	1,651
Tuna & tunalike in brine	522	290	338	227
Mackerel in olive oil	6,367	3,221	5,528	3,295
Other fish	800	382	991	415
Total	58,407	34,958	62,756	37,152

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Portuguese Canned Fish Pack, January-October 1957		
Product	Net Weight	Canners' Value
	Metric Tons	US\$ 1,000
In Olive Oil:		
Sardines	24,482	14,688
Sardineline fish	10,896	5,344
Anchovy fillets	2,515	2,509
Tuna	1,459	1,058
Other species (incl. shellfish)	719	472
In Brine:		
Sardineline fish	4,929	1,241
Other species	874	255
Total	45,874	25,567

NOTE: VALUES CONVERTED AT RATE OF 28.75 ESCUDOS EQUALS US\$1.

CANNED FISH PACK, JANUARY-OCTOBER 1957: The total pack of canned fish for January-October 1957 amounted to 45,874 metric tons as compared with 42,600 tons in the first 10 months of 1956. Canned sardines in oil (24,482 tons) accounted for 53.4 percent of the January-October 1957 total pack, higher by 10.1 percent than the pack of 22,228 tons for the same period in 1956. For the first 10 months of 1955 the total pack of all canned fish amounted to 29,623 tons (21,135 tons sardines in oil).

The Portuguese pack of canned sardines in oil totaled 8,404 tons during October 1957. The pack of all canned fish in October 1957 amounted to 9,801 tons, the February 1958 *Conservas de Peixe* reports.

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FISHERIES TRENDS DECEMBER 1957: Sardine Fishing: During December 1957, the Portuguese fishing fleet landed 12,488 metric tons of sardines (valued at US\$1,270,000 ex-vessel or \$101.70 a ton). In December 1956, a total of 9,531 tons of sardines were landed (valued at US\$1,663,000).

Canneries purchased 57.1 percent or 7,134 tons of the sardines (valued at US\$805,078 ex-vessel or \$112.85 a ton) during December. Only 34 tons were salted, and the balance of 5,320 tons, or 42.6 percent of the total was purchased for the fresh fish market.

Matosinhos lead all other ports in December landings of sardines with 10,885 tons or 87.1 percent, followed by Setubal 593 tons (4.7 percent), and Peniche 421 tons (3.4 percent).

Other Fishing: The December 1957 landings of fish other than sardines consisted of 18 tons (value US\$974) of anchovy and 8,332 tons (value US\$309,600) of chinchard. (Conservas de Peixe, February 1958.)

CORRECTION

In the article "Fisheries Trends, November 1957" which appeared in April 1958 issue of the Review, under the heading Other Fishing, the word "December" in the first line on page 69 should read: "November."



Spain

VIGO FISHERIES TRENDS, 1957: During 1957 the fishing industry in the Vigo, Spain, area suffered from increased operating costs due to a 20-45 percent increase in fuel costs, a 50-percent increase in wages, and increases ranging from 20-60 percent in costs of materials, repairs, and other services.

The advantage gained by the raising of the exchange rate for exports (now 42 pesetas to US\$1, plus a 3-peseta premium) was lost when the peseta fell heavily in the free market during 1957. The effectiveness of the ban on the sale of fish to France and the high taxes by Spanish fishermen will not be fully tested until the tuna season begins in 1958.

For 1958 the fishing industry hopes for cheaper fuel prices; a ruling to allow them to spread their money losses over more than one tax year, thus reducing the tax in profitable years; and, tax exemptions on profits invested in fleet modernization.

The proposed Government plan for fleet modernization would allow tax exemptions of 50 percent on profits diverted to this use, if they exceed 6 percent of the total investment. Fishermen consider this plan inadequate.

Vigo Fish Exchange: According to statistics supplied by the Vigo Fish Exchange, the fish catches sold through the exchange in 1957 increased 14 million pounds over the 1956 total of 127.2 million pounds.

The 1957 landings of Vigo increased 11 percent in weight, and 26 percent in peseta value. The average price per pound went up from about 7.6 U.S. cents to 8.6 U.S. cents a pound. The total 1957 value was US\$12,154,133 at the official rate of 42 pesetas to the dollar.

The leading variety passing through the Vigo exchange was small hake, which increased 11 percent from 1956 to a 1957 total of 18.5 million pounds. Other important varieties were tuna (8.0 million pounds both in 1957 and 1956), and sardines (which increased to 16.2 million from 9.3 million pounds in 1956).

Cod sold through the exchange declined 1.2 million pounds from the 1956 total of 4.1 million pounds. The average price for cod rose about 1.2 U.S. cents a pound to 6.1 U.S. cents a pound in 1957.

Fish Canning: Production of canned fishery products in the Vigo area reflected the failure of fishery products to keep up with increased food consumption in Spain. Fish bought by canneries from the exchange dropped to 27.8 million pounds in 1957 from the 1956 total of 27.9 million pounds.

Other Fishery Products: Shipments of fresh fish to interior markets increased 7.6 million pounds over the 1956 total of 86.0 million pounds. The production of smoked, dried, and byproducts increased from 12.1 million pounds in 1956 to 19.7 million pounds in 1957.

Exports: Preliminary estimates of exports of fishery products indicate a slight decline in 1957. Japanese competition in Swiss markets, where they have undercut Spanish prices over 25 percent, has cut into exports of canned tuna and anchovies to that country by close to 25 percent. Anchovy exports to Italy also declined by a like amount. Italy refused to raise their quota of 4,000 metric tons of Spanish tuna annually. Increased 1957 sardine catches helped to increase exports of this variety to South American and Cuban markets, but only by a small amount, the United States Consulate in Vigo reported in a February 4, 1958, dispatch.



Surinam

REPORT ON EXPLORATORY SURVEY OF FISH AND SHRIMP GROUNDS: The results of the exploratory survey of fish and shrimp grounds by the chartered shrimp vessel Coquette were released early in 1958 by the Surinam Department of Agriculture, Animal Husbandry and Fisheries.

The principal varieties of large shrimp caught have been tentatively identified as Penaeus braziliensis (pink shrimp) and they make up 90 percent of the catch and Penaeus aztecus (brown shrimp) the balance. The shrimp caught (both varieties) are large and average 10-15 count heads off. The largest caught were 8 count. During the first month of the survey, catches from the area covered indicated a possible catch of 500 pounds a night, and 350 pounds a night in the area covered during the second month of the survey.

During the 90-day exploratory period the Coquette did not seek maximum catches but pursued its basic purpose of

exploration and development and often continued exploring areas with no shrimp concentrations in order to establish the extent of the resource. It is estimated that the Surinam fishing area with good shrimp trawling grounds is extensive.

The average shrimp catch could be increased significantly by having several boats fishing cooperatively. Several visiting foreign fishery experts have expressed their opinion that shrimp production would steadily increase as soon as commercial shrimping operations start, which would aid in eliminating substantially the predatory species that normally feed on young shrimp.

The principal variety of edible fish caught was sea trout (Cynoscion accoupa), as well as other members of the croaker family. When the vessel explored for finfish, catches averaged 390 pounds per one-hour tow with shrimp trawls. In addition to other fish species, extensive scallop grounds were located off the Surinam coast, and the scallops were

as small or smaller than the United States east coast bay scallops.

As a result of the survey findings, the Government of Surinam purchased the trawler Coquette and chartered it to a joint United States-Surinam fishing company for a period of 12-18 months with a purchase option agreement. In addition, the Surinam Government has agreed to an ex-

panding plan of cooperation with the firm, which includes the erection of a new flake ice installation, new docks, a possible marine railway, and an educational program to teach local crews to operate shrimp trawlers. The fishing company with its new 30,000-pound-per-day freezing plant advised that it has been negotiating with independent trawler operators who have indicated their interest in establishing operations in Surinam.

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SHRIMP SURVEY RESULTS PUBLISHED: The Surinam Department of Agriculture, Animal Husbandry and Fisheries released a report Zeevisserij-Onderzoek-"Coquette" Survey Report on the M/V Coquette explorations for shrimp and fish during 1957. The conclusions and recommendations (based on a 5-month preliminary survey and therefore subject to change) made in this report are as follows:

Conclusions: (1) Seabobs cannot be profitably fished for at current price levels (about 4 U. S. cents a pound) by shrimp trawlers similar to the Coquette. (2) The quantities of brown shrimp present in the inner coastal strip are not plentiful enough to support a commercial shrimp fishery. (3) Edible fish populations in the inner strip and brown shrimp in the outer strip, taken together, are present in quantities large enough to support a commercial fishery of modest proportions.

Recommendations: (1) That equipment be installed aboard the Surinam Lightship to accumulate data from which a factual pattern of offshore weather can be built up and to give fishing vessels a better day to day indication of offshore weather conditions, to aid in planning trips. (2) That the dumping of surplus scrap and other materials in the ocean be confined to areas where it will not constitute a hazard to shrimp and fish trawls. (3) Recommendations with respect to facilities and services for the start of a commercial trawling operation have already been initiated, and as a result, a local commercial fishing company has begun trawling operations. (United States Consul in Paramaribo, February 13, 1958.)

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FISH AND SHELLFISH CATCH LOWER IN 1957: The Surinam landings of fish and shrimp in 1957 amounted to 5.9 million pounds--a drop of 19 percent from the 7.3 million pounds landed in 1956, according to a February 1958 report by the Surinam Government. The report indicated that the decline was due to the unusual drought which lowered water levels in the fish ponds and also increased the salinity.

The net fishery for shrimp, the fishery for local stream fish (kandertikie), and shallow-pond fishery (pannevissierij) were the hardest hit. In 1957 as a result of the failure of shrimp to appear during the main dry season, catches declined from 700 metric tons in 1956 to 325 tons. Only 80 tons of shrimp were processed at the Surinam shrimp packing plant as compared with 325 tons in 1956. The balance of the 1957 shrimp landings was sold in the fresh market or dried.

The pond fisheries suffered from a shortage of water and excessive salinities and as a result 10 tons of snook died in the ponds. The bank-net fishery catch was also poor, states a March 1, 1958, dispatch from the United States Consul in Paramaribo.



Sweden

RESEARCH ON ARTIFICIAL PROPAGATION OF SALMON: Salmon research in Sweden, which is quite extensive, has endeavored during the last few years to solve the many problems arising out of diseases to which salmon are subject. These efforts are of particular importance in Sweden where the Swedish Water Power Board maintains large propagation pools at the many dams throughout the country. In these concentrated centers where thousands of fish are crowded in a small space and where they are often caught, counted, and fed, conditions are entirely different for the salmon fry than those offered by the clear and pure water of the large rivers where the bacteria content hardly constitutes a danger.

Inasmuch as the dangers of disease are far greater in the propagation ponds than in the rivers, it is found that many diseases crop up which have not previously been discovered. The Swedish Water Power Board's fish biologists have also found that in learning to recognize more causes of diseases they also learn to prevent and combat the diseases.

It is reported that at the Board's establishments diseases are under control and losses are being reduced, slowly but surely. There still remains much to be done, however, and in order to expand the work a fish bacteriologist has been added to the staff of the Water Power Board. The bacteriologist, who will work under the guidance of the Board's fish biologist, will carry out a program directed by a fishery inspector who is a specialist in this field. The bacteriologist's duties will be to seek to prevent disease and to reduce losses at the Board's large breeding establishments, the United States Consul at Goteborg reported on February 24, 1958.

* * * * *

FISHING COMPANY TO EXPERIMENT WITH ELECTRICAL SHOCK FISHING: A German method of fishing by means of electric shock is to be tried on the Swedish west coast this spring. A Gothenburg company has received permission by the Board of Fisheries to make experiments over a period of three months. The new method is reported to be highly selective, so that only that size of fish wanted at a given moment is affected by the current.

The Swedish company has developed its method on the basis of a direct-current motor designed by the German physicist Conrad Kreuzer. The fish, for instance cod, tends to swim towards the positively-charged pole in an electric field and is thus directed towards a chosen point where it is numbed by the current, floats to the surface and can be easily collected in a hoop net or by a specially-designed suction apparatus. The voltage is regulated so that the potential drop between the head and the tail of the fish corresponds exactly to the size fished for. The method thus spares fry and small fish.

When fishing for tuna, which is usually done by trolling and which requires special skill, it is proposed to use the hook as an electric conductor. A series of short direct current shocks of 400 volts and 100 amperes numbs the fish, which can then be taken on board and handled without difficulty. The Gothenburg firm is working in close contact with the German inventor and is said to have perfected the method, according to a report from the Swedish International Press Bureau, dated February 7, 1958.

* * * * *

AGREEMENT ON FISH EXPORTS TO EAST GERMANY CONCLUDED: The new global compensation agreement between Sweden and East Germany (signed on February 18, 1958) provides for an exchange of goods in each direction with a value of Sw.kr.91,450,000 (US\$17,650,000). The largest part of the Swedish share of the

exchange of goods is made up of fish valued at Sw. kr. 22,500,000 (US\$4,342,500), unchanged from the 1957 agreement, plus fish preserves valued at Sw. kr. 4,500,000 (US\$868,600).

With the global compensation arrangement between Sweden and East Germany concluded, the agreements concerning Swedish fish exports during the current year, signed in Berlin at the end of January 1958, also became effective.

The greater part of this export takes place through the medium of Vastkustfisk (West Coast Fish). The contracts signed on behalf of Vastkustfisk on January 31, 1958, amount to Sw. kr. 16,100,000 (US\$3,107,000). Later on, additional deliveries totaling 1,400,000 crowns (US\$270,200) may be discussed. The contracts cover deliveries from Vastkustfisk during the entire year.

The Vastkustfisk contracts include considerable quantities of fresh and frozen winter herring and Fladen herring, and salted Fladen herring. The quantity of frozen fish is considerably larger than for 1957.

A new item in this year's agreement comprises certain quantities of Baltic cod. It is of interest to note that there is an increase in the quantity of fillets of cod, haddock, and coalfish, which item was included for the first time last year. The mackerel contingent is considerably reduced, however.

In last year's agreement certain price increases were obtained because of higher expenses for fishing and cost of living. Over one-half of this increase is lost in this year's agreement. (United States Consulate at Goteborg, March 3, 1958.)

NOTE: VALUES CONVERTED AT THE RATE OF SW.KR.5.1813= US\$1. ALSO SEE COMMERCIAL FISHERIES REVIEW, MARCH 1957, P. 52.



United Kingdom

UNITED STATES AND CANADA CANNED SALMON QUOTA INCREASED: The United Kingdom's Board of Trade informed the United States Embassy in London March 19, 1958, that the British quota on canned salmon from the United States and Canada for the year ending June 30, 1959, is to be increased from £3½ million (US\$9.8 million) to £4½ million (US\$12.6 million) c.i.f.

This action by the Board of Trade is welcomed as another step in the relaxation of import restrictions against North American products. The United States Departments of Interior, State, and other executive departments have in recent years sought relaxation of the restrictions on United States canned salmon. In the case of the United Kingdom restrictions, liberalization has been sought through government-to-government consultation and also through informal Embassy contact in London. The United States has been interested in getting countries such as the United Kingdom to liberalize imports from the United States in order to regain traditional markets for its products.

* * * * *

COMPLETES 17th LARGE TRAWLER FOR RUSSIA: The 17th of 20 trawlers contracted for by Russia from a Lowestoft shipyard completed her trial runs off Lowestoft early in February 1958. The total cost of the trawler was close to £7 million (US\$19.6 million). The vessel was named Okunj. The 675-ton vessel behaved well during the trials, which were held in a fierce snowstorm. On several trial runs of a measured mile the Okunj averaged 12 knots. She made 17 knots on one trial run with the tide.

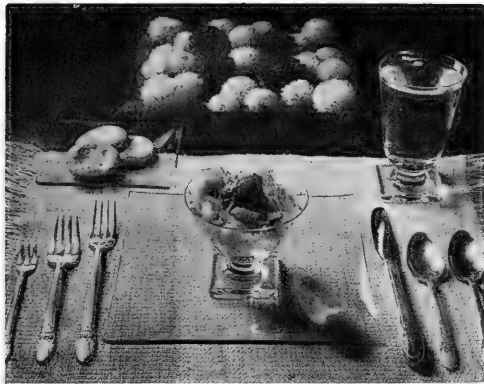
The new trawler's bows and keel are strengthened for icebreaking. Her interior is insulated against cold weather and there are steam valves all over the deck for removing ice accumulations. The vessel is equipped with reading lights over the bunks, comfortable chairs, a movie projector in the messroom, and a hospital ward for the crew of 44 men. The trawler is rigged for fishing in the normal way.

The Okunj will leave England for Kalingrad where she will obtain fishing gear and be fitted with radar. The final three of 20 trawlers will be completed and turned over to the Russians before the end of 1958 (Fishing News, February 14, 1958).



SEAFOOD COCKTAIL FOR YOUR SUNDAY DINNERS

Traditionally, holiday or Sunday dinners have an appetizer or attractive cocktail. An attractive appetizer is a seafood cocktail with a tangy, colorful sauce that whets the appetite. It can be prepared by using any one of a variety of fish or shellfish that are available such as crab meat, lobster meat, shrimp, or cooked or canned fish.



SEAFOOD COCKTAIL

Several good rules to follow in preparing a seafood cocktail are:

1. Choose and prepare a tangy, colorful sauce.
2. Have all ingredients chilled--lettuce crisp.
3. Arrange artistically in attractive containers.

Choose a complimentary garnish.

The home economists of the U. S. Bureau of Commercial Fisheries recommend this seafood cocktail.

SEAFOOD COCKTAIL

1 POUND COOKED CRAB MEAT, OR LOBSTER MEAT,
OR SHRIMP, OR COOKED OR CANNED FISH
 $\frac{3}{4}$ CUP CHILI SAUCE
 $\frac{1}{2}$ CUP CHOPPED CELERY
 $\frac{1}{4}$ TABLESPOON LEMON JUICE

1 TABLESPOON HORSE RADISH
 $\frac{1}{2}$ TEASPOON SALT
LETTUCE
PARSLEY
LEMON WEDGES

Break seafood into large pieces. Combine chili sauce, celery, lemon juice, horseradish, and salt. Chill. Arrange lettuce in 6 sherberts or cocktail glasses. Place seafood on top; cover with cocktail sauce. Garnish with parsley and lemon wedges. Serves 6.



FEDERAL ACTIONS



Bureau of the Budget

ADDITIONAL FISHERY FUNCTIONS TRANSFERRED TO INTERIOR DEPARTMENT:

Additional commercial fisheries responsibilities of the Federal Government are being taken over by the Department of the Interior by transfer from the Commerce and Agriculture Departments. This was announced April 9 by Assistant Secretary of the Interior Ross Leffler, following Budget Bureau approval of the transfer of functions in line with provisions in the Fish and Wildlife Act of 1956.

Congress established a separate Bureau of Commercial Fisheries within the United States Fish and Wildlife Service of the Interior Department in the 1956 Act and assigned to the Bureau principal Federal responsibility for commercial fishery matters. Actual transfer of departmental operations will be made gradually as routines are worked out.

Two of the new responsibilities of the Bureau of Commercial Fisheries relate to mortgage insurance and loans for construction of fishing vessels, jurisdiction of which resided heretofore in the Maritime Administration. This authority is apart from that already lodged in Interior to administer the fisheries loan program for financing, operating, and maintaining fishing vessels.

All the functions of the Department of Agriculture pertaining to fish and shellfish now performed under the Agricultural Marketing Act of 1946 are also transferred to Interior. Among these is the authority for the development and promulgation of voluntary grade standards for fishery products and for the inspection and certification of such products. In the past the standards for

fishery products--such as those for fish sticks and breaded shrimp--were developed by Interior's Bureau of Commercial Fisheries but were promulgated by the Department of Agriculture.

The distribution and disposal of surplus fishery products also is transferred to Interior from Agriculture, subject to actual handling of the products through Agriculture's established distribution facilities to avoid duplication of similar facilities in Interior.

Interior also is being given authority, previously held by Agriculture, for conducting transportation studies for the fishing industry. The two Departments will work cooperatively on legal services required in rate-structure presentations.

The Interior Department is further developing a series of memoranda of understanding with the Department of Commerce, Agriculture, State, Health, Education, and Welfare, the Federal Trade Commission, and the Corps of Engineers, specifying the responsibilities of the various agencies in areas of joint interests on fishery matters.

The Budget Bureau order effecting the transfer of fishery activities to the Interior Department appeared in the April 9, 1958, issue of the Federal Register as follows:

BUREAU OF THE BUDGET

TRANSFER OF CERTAIN FUNCTIONS RELATING TO COMMERCIAL FISHERIES TO DEPARTMENT OF INTERIOR

DETERMINATIONS WITH RESPECT TO CERTAIN
MATTERS PURSUANT TO ACT OF AUGUST 8,
1956

MARCH 22, 1958.

Pursuant to section 6 (a) of the Act of August 8, 1956, popularly known as the Fish and Wildlife Act of 1956 (16 U. S. C. 742e), it is hereby determined that the following functions relate primarily to the development, advancement, management, conservation, and protection of commercial fisheries and shall be deemed

to be transferred to the Department of the Interior by that act:

1. The distribution and disposal of surplus fishery products now performed by the Department of Agriculture under the authority of the act of August 11, 1939 (15 U. S. C. 713c-2).

2. All functions of the Department of Agriculture which pertain to fish, shellfish and any products thereof, now performed under the authority of title II of

the act of August 14, 1946, popularly known as the Agricultural Marketing Act of 1946, as amended (7 U. S. C. 1621-1627), including but not limited to the development and promulgation of grade standards, the inspection and certification, and improvement of transportation facilities and rates for fish and shellfish and any products thereof.

3. All functions of the Maritime Administration, Department of Commerce,

which pertain to Federal ship mortgage insurance for fishing vessels under authority of title XI of the Merchant Marine Act of 1936, as amended (46 U. S. C. 1271-1279), provided that the amount of loans outstanding under this transferred authority shall not exceed \$10,000,000 at any one time.

4. All functions of the Maritime Administration, Department of Commerce, which pertain to direct loans to aid construction of fishing vessels under authority of title V of the Merchant Marine Act of 1936, as amended (46 U. S. C. 1151-1161c).

It is further determined that pursuant to said section 6 (b) of the Act of August 8, 1956, the following are necessary in connection with the exercise of the above listed functions and shall be deemed to be transferred to the Department of the Interior by that Act:

a. The amounts shown in Schedule I, hereto attached, which amounts are hereby determined to be available for use, as specified in said schedule, in connection with the functions transferred by said Act;

b. The property and records shown in Schedule 2 hereto attached, which property and records were used or held in connection with the functions transferred by said Act.

MAURICE H. STANS,
Director.

SCHEDULE 1—FUNDS TO BE TRANSFERRED FROM U. S. DEPARTMENT OF AGRICULTURE TO U. S. DEPARTMENT OF INTERIOR UNDER SECTION 6 OF PUBLIC LAW 1024, 84TH CONG.

From—	Amount	To—
Department of Agriculture Agricultural Marketing Service		Department of Interior Fish and Wildlife Service
(D) 1222500.029 Marketing Research and Service, Agricultural Marketing Service, 1958, Marketing Services, general.	\$5,000	1481731 Management and Investigations of Resources, Bureau of Commercial Fisheries.

SCHEDULE 2—PROPERTY AND RECORDS TO BE TRANSFERRED FROM U. S. DEPARTMENT OF AGRICULTURE TO U. S. DEPARTMENT OF INTERIOR UNDER SECTION 6 OF PUBLIC LAW 1024, 84TH CONG.
Property—None.

Records—Description of property	Location	Method of storage	Number or volume transferred
I. C. J. dockets on fishery transportation rates.	Room 1441 South Bldg., USDA.	Record storage cartons.....	Total cartons, 4.
Rail Freight Rate study 1957.....do.....do.....	
Other items including current market reports, correspondence with National Fisheries Institute and Oyster Institute, etc.do.....do.....	



Federal Trade Commission

ILLEGAL FOR A BROKER TO PASS ON ANY PART OF BROKERAGE COMMISSION TO BUYER: The Federal Trade Commission on December 20, 1957, ruled that it is illegal for a broker to pass on any part of his customary brokerage commissions to the buyer. This ruling was made in a Commission decision (Order 6484, Food Products) ordering a Chicago food brokerage firm to stop cutting its usual brokerage fees to enable buyers to obtain better prices.

The Commission adopted the February 26, 1957, initial decision by one of its hearing examiners who had ruled this fee cutting is equivalent to granting a buyer allowances in lieu of brokerage, in violation of Sec. 2(c) of the Robinson-Patman Amendment to the Clayton Act.

Specifically, the examiner had found that an Ohio company placed an order for 500 barrels of apple concentrate, offering to pay \$1.25 per gallon. The seller in Canada would not sell for less than \$1.30. The sale was made, however, when the Chicago food broker accepted from the Canadian firm a fee of 3 percent instead of the agreed 5 percent.

In an opinion accompanying the Commission's order, Commissioner Sigurd Anderson said, "...The only reasonable inference possible to be drawn from those facts established of record is that ... respondent's acceptance of a reduced brokerage in such circumstances constitutes a payment of part of their commission to the buyer exactly as though respondents had paid two percent of their commission to the buyer direct."

Among other things, the Chicago broker had contended that Sec. 2(c) relates only to discriminatory practices on the part of sellers and buyers, and enacts no liability for independent seller's brokers.

Rejecting this contention, the Commission said "it is the office of that subsection to outlaw the diversion of bro-

kerage to buyers, or any form of commission or sales compensation, to buyers in any manner, directly or indirectly, from any source."

The Commission's order prohibits the respondents from granting buyers allowances in lieu of brokerage by selling to them at prices reduced from the sellers' prices, where the reduction is accompanied by a reduction in the respondents' regular rate of commission.

* * * * *

CANNED SEAFOOD FIRMS DENY CHARGES OF PAYING ILLEGAL BROKERAGE:

A Seattle, Wash., packing company and its affiliated selling agent, denied Federal Trade Commission charges of paying illegal brokerage to some customers, the Commission announced on March 19, 1958.

Answering (Answer 7021, Canned Seafood) the Commission's complaint of December 31, 1957, the firms deny granting some customers discounts or allowances in lieu of brokerage, or reduced prices reflecting brokerage.

Specifically, they deny the Commission's allegation that on direct sales not

involving field brokers, the price to favored customers is reduced by the $2\frac{1}{2}$ percent which ordinarily would be paid as brokerage fees. They also deny that in other transactions handled through field brokers, favored customers are allowed discounts under the guise of advertising allowances, accomplished by cutting the field brokers' normal brokerage.

Joining in the answer are officers of the packing company and partners in the selling firm.

The respondents ask that the complaint be dismissed.

The Federal Trade Commission announced on March 20, 1958, that another Seattle, Wash., firm handling canned seafood, and its President, has denied charges of paying illegal brokerage to some customers.

Replying (Answer 7035, Canned Seafood) to a Federal Trade Commission complaint, issued January 14, 1958, they deny that favored customers are given reduced prices reflecting brokerage, or rebates in lieu of brokerage, in violation of Sec. 2(c) of the Robinson-Patman Amendment to the Clayton Act.

The respondents deny that in many direct sales not involving field brokers, at least one large buyer is granted a $2\frac{1}{2}$ -percent rebate under the guise of a promotional allowance. Among other things, they deny giving favored customers unlawful allowances by (1) selling their principals' seafood products at net prices lower than those accounted for to the packer-principals, and (2) selling their own canned salmon and other seafood at net prices lower than those charged non-flavored buyers.

In addition to owning all or substantially all of the firm's outstanding stock, the complaint said, the President substantially owns, and is president of, two seafood packing companies; one of which owns and operates canneries in Kodiak, Cordova, and Juneau, Alaska; and the other of which owns a clam-packing plant at Aberdeen, Wash.

According to the answer, the firm's President owns no interest in the Alaska canneries; the Aberdeen, Wash., firm does not own the Aberdeen plant.

The respondents ask that the complaint be dismissed.

* * * * *

MORE SALMON BROKERS DENY CHARGES OF MAKING ILLEGAL BROKERAGE PAYMENTS: Three Seattle, Wash., primary brokers of canned salmon and other seafood have denied charges of unlawful payment of brokerage to some customers, the Federal Trade Commission announced on March 20, 1958. The three primary brokers filed separate answers (Nos. 6977, 6980, and 6982, Canned Salmon) to the Commission's complaints, issued on December 12, 1957.

All three deny the Commission's allegation that they have granted certain buyers discounts or allowances in lieu of brokerage, while the latter two deny receiving brokerage fees on purchases made for their own accounts. These activities, the complaints alleged, violate Sec. 2(c) of the Robinson-Patman Amendment to the Clayton Act.

The respondents make these specific denials: The first brokerage firm denied it had made illegal price concessions by (1) selling at net prices which were less than those accounted for to its packer-principals, and (2) granting price deductions which were not charged back to the packers.

The second firm denied that, in transactions where he acted as a primary broker, he (1) granted certain buyers rebates (such as freight payments, "trade discounts," and "promotional allowances") which were not charged back to his principals but taken from his fees, and (2) sold at net prices lower than those accounted for to the packers. He also denies accepting brokerage on canned seafood purchased for his own account and resold at a profit.

The third also denied using these means to give illegal grants: (1) selling at net prices less than those accounted for to the packers, (2) granting rebates not charged back to the packers but absorbed out of his brokerage earnings, and (3) taking reduced brokerage on large sales involving price concessions. Also denied are charges that he accepted the customary 5 percent brokerage on purchases of canned salmon for his own account and paid buyers $2\frac{1}{2}$ percent brokerage on the resale of the product.

All parties ask that the complaints be dismissed.

* * * * *

**CONSENT ORDER
PROHIBITS TWO MAINE
SARDINE CANNERS FROM MAKING
ILLEGAL BROKERAGE PAYMENTS:**

The Federal Trade Commission on January 10, 1958, approved a consent order (6752, Sardines) prohibiting two Maine sardine canners from making illegal brokerage payments to some of their customers.

The Commission adopted an initial decision by Hearing Examiner Joseph Callaway containing an order agreed to by the parties and the Commission's Bureau of Litigation.

A Commission complaint, issued March 27, 1957, had alleged the parties customarily sell canned sardines through brokers, who receive commissions

of up to 5 percent of the market price. However, the complaint charged, some sales are made directly to purchasers at prices as much as 5 percent below the market price.

The result of these latter transactions, the complaint alleged, is that the respondents are giving direct buyers discounts in lieu of brokerage in violation of Sec. 2(c) of the Robinson-Patman Amendment to the Clayton Act, which prohibits sellers from giving brokerage or other compensation to customers buying for their own account.

The complaint noted that the respondent's products are packaged in cans with and without keys, with brokers receiving a 3-percent fee on sales of keyless cans and 5 percent on sales of cans with keys.

Since early 1954, the complaint continued, brokers have been permitted to make sales to purchasers at 5 percent below market price. When the broker makes such a sale, however, the respondents pay him fees of less than 3 or 5 percent. (On these sales he is usually paid .10 cents per case of sardines.) The result of this transaction, the complaint charged, is that the buyer purchasing through the broker at 5 percent off is receiving part of the commission to which the broker is ordinarily entitled. This practice also violates the law, the complaint said.

The order prohibits these practices in the future. The agreement is for settlement purposes only and does not constitute an admission by the parties that they have violated the law.

* * * * *

TUNA PRICE-FIXING CHARGES AGAINST FISHERMEN'S COOPERATIVE DISMISSED:

The Federal Trade Commission on March 13, 1958, dismissed without prejudice (Order 6623, Tuna) its charges that a Seattle, Wash., boat-owner association has engaged in a conspiracy to fix tuna prices and to prevent competition in this industry.

The Commission adopted an initial decision filed December 10, 1957, by a

Hearing Examiner, who had granted a motion to dismiss made by counsel supporting the complaint. Included in the order are the Association's officers, directors, and members.

On July 24, 1957, the Commission accepted agreements for consent order and issued its order to cease and desist as to 138 other respondents named in the complaint, filed August 29, 1956. The parties, comprising substantially all of the West Coast tuna industry, were ordered to stop fixing prices for the tuna they produced--well over half the nation's pack. The Commission's order also prohibits attempts to suppress competition.

Even though the Seattle Cooperative and its officers are not parties to that order, the attorney in support of the complaint said that it effectively will prevent the continuation or repetition of the alleged illegal practices.



Tariff Commission

HEARINGS ON SIMPLIFICATION OF TARIFFS:

The U. S. Tariff Commission held public hearings on March 4, 1958, to consider proposed revised and consolidated tariff schedules on animal and vegetable products pursuant to Title I of the Customs Simplification Act of 1954, as amended. The hearings were principally for the purpose of receiving information and views regarding the probable effects upon domestic industries concerned, of the incidental changes in rates of duty which are involved in the draft schedules.

Title I of the Customs Simplifications Act of 1954 directed the Commission to study the laws of the United States prescribing the tariff status of imported articles and to submit to the President, the Chairman of the Ways and Means Committee of the House of Representatives, and the Finance Committee of the Senate a revision and consolidation of these laws which, in the judgment of the Commission, will be logical in arrangement and terminology and adapted

to the changes which have occurred since 1930 in the character and importance of articles produced in and imported into the United States and in markets in which they are sold; eliminate anomalies and illogical results in the classification of articles; and simplify the determination and application of tariff classifications.

Plans for the proposed changes call for 8 schedules and an appendix. The hearings in March considered the draft of proposed Schedule 1 entitled "Animal and Vegetable Products." Fish and shellfish products are included in this schedule. Several changes in classification terminology have been proposed which may result in minor duty changes.

The ultimate adoption of the proposed new schedules is dependent upon the enactment of further legislation by the Congress. Release of the remaining schedules and the hearings thereon will be announced from time to time. The final draft and report will be submitted to the Congress and the President, after all the schedules have been released and public hearings held.

Copies of the proposed new schedules are available for inspection at all field offices of the Department of Commerce; the offices of collectors of customs and appraisers at all headquarter ports of entry in the United States.

* * * * *

PROPOSED REVISED TARIFF SCHEDULES FOR FISHERY PRODUCTS IMPORTS:

The proposed revised and consolidated tariff schedules which are in preparation by the U. S. Tariff Commission may result in changes in the classification and duties for certain fishery products. As is usual with changes in terminology, it is difficult to foresee all the possible changes in rates of duty that might result. Among the principal changes which the new fishery-product schedules propose are the following:

1. A separate classification would be established for scaled fish.
2. A new classification of fresh or frozen fish, "Otherwise processed," would be established which would include the present classification "fileted, skinned, boned, sliced, or divided into portions, n.s.p.f."
3. The term "in airtight containers" would be applied to fish which are "prepared or preserved in any manner, if packed in oil or in oil and other substances." The present classification for pack in oil is not limited to airtight containers.
4. Classifications which now provide for duties on fish packed in oil, valued "not over 9 cents per pound, including the weight of the immediate container" were elimi-

nated. The following changes would result in duties for any products coming under this value bracket:

Article	Present Rate	Under Proposed New Schedule
 (% ad valorem)	
In airtight containers:		
Anchovies	22	15
Bonito and yellowtail	22	15
Herring	44	25.5
Sardines (not over 1 3/4 per lb.)	44	30
Antipasto	22	12.5
Smoked pollock	44	15
Other fish	44	25.5

Copies of the proposed revised schedules prepared by the Tariff Commission are available for inspection at field offices of the Department of Commerce, and at offices of collectors of customs and appraisers at all headquarter ports of entry in the United States.

A revised document, taking into account information obtained at public hearings, will ultimately be submitted by the Tariff Commission to the President and to the Chairmen of the House Ways and Means Committee and the Senate Finance Committee. The purpose of the study is to simplify commodity definitions and rate structures, and adapt terminology to trade changes which have occurred since passage of the Tariff Act of 1930. The ultimate adoption of the proposed new schedules is dependent upon the enactment of further legislation by the Congress.

On March 4, 1958, public hearings were held by the U. S. Tariff Commission to receive views and information regarding the probable effect upon domestic industries concerned of the incidental changes in rates of duty which are involved in the draft schedules.



Treasury Department

BUREAU OF CUSTOMS

UNITED STATES CANNED IN BRINE TUNA IMPORTS UNDER QUOTA PROVISIO FOR 1958:

The quantity of tuna canned in brine which may be imported into the United States during the calendar year 1958 at the 12½-percent rate of duty is limited to 44,693,874 pounds, 1.7 percent less than the 45,460,000-pound quota for 1957. Any imports in excess of that quantity will be dutiable at 25 percent ad valorem.

Any tuna classifiable under Tariff Act paragraph 718(b)--fish, prepared or preserved in any manner, when packed in airtight containers ..(except fish packed in oil or in oil or other substances; ...)--which is entered or withdrawn for consumption during 1958 is included.

A proclamation (No. 3128), issued by the President on March 16, 1956, gave effect to an exchange of notes with the Government of Iceland to withdraw tuna

canned in brine from the 1943 trade agreement and invoked the right to increase the duty reserved by the United States in negotiations with Japan and other countries under the General Agreement on Tariffs and Trade. The quota is based on 20 percent of the previous year's United States pack of canned tuna.

The notice as published in the April 8, 1958, Federal Register follows:

DEPARTMENT OF THE TREASURY

Bureau of Customs

[T. D. 54560]

TUNA FISH

TARIFF RATE QUOTA

APRIL 3, 1958.

Pursuant to Presidential Proclamation No. 3128 of March 16, 1956 (T. D. 54951), it has been determined that 44,893,874 pounds of tuna may be entered for consumption or withdrawn from warehouse for consumption during the calendar year 1958 at the rate of 12½ per centum ad valorem under paragraph 718 (b), Tariff Act of 1930, as modified. Any tuna classifiable under paragraph 718 (b) of the tariff act which is entered, or withdrawn, for consumption during the current calendar year in excess of this quota will be dutiable at the full rate of 25 per centum ad valorem.

The above quota is based on the United States pack of canned tuna during the calendar year 1957, as reported by the United States Fish and Wildlife Service.

[SEAL]

RALPH KELLY,
Commissioner of Customs.



Eighty-Fifth Congress

(Second Session)

Public bills and resolutions which may directly or indirectly affect the fisheries and allied industries are reported upon. Introduction, referral to committees, pertinent legislative actions, hearings, and other chamber actions by the House and



Senate, as well as signature into law or other final disposition are covered.

ALASKA-SPAWNED SALMON PROTECTION:
H. Res. 451 (Tollefson) introduced in the House on January 23, 1958, a resolution calling on the Secretary of the Interior and all departments of Government to protect Alaska-spawned salmon. Reported (H. Rept. No. 1447) favorably on March 3, 1958 by House Merchant Marine and Fisheries Committee, with amendments, and referred to the House Calendar.

H. Rept. No. 1447, Protecting the Alaskan Fisheries (March 3, 1958, 85th Congress 2nd Session, to accompany H. Res. 451), 2 pp. printed. The report recommended that the resolution be amended to read as follows: Resolved, that the Secretary of the Interior is instructed to urge all departments of Government to immediately take such steps as are necessary to protect the salmon fisheries of the Territory of Alaska.

H. Res. 451 was adopted by the House on March 17, 1958, as amended.

S. Res. 263 (Magnuson, Jackson, and Morse) agreed to by the Senate without Amendment, on March 6, 1958, as follows: Resolved, that the Secretary of State, together with other appropriate officials of our Government, immediately initiate negotiations with the appropriate officials and agencies of the Government of Japan for the purpose of: (a) Effectuating the purposes of the treaty entered into by the United States, Canada, and Japan in 1952; and (b) Assuring in time for the 1958 season necessary action to prevent destruction of salmon stocks of North American origin.

See Commercial Fisheries Review, March 1958, p. 63, and April 1958, pp. 82-83, for other information on these resolutions.

COMMERCIAL PRODUCTION OF FISH ON RICE LANDS: S. 1552 (Fullbright), a bill to authorize the Secretary of the Interior to establish an experiment station or stations for the purpose of carrying on a program of research and experimentation to develop methods for commercial production of fish on flooded rice acreage in rotation with rice field crops. Passed the House on March 3, 1958, with amendments. This bill was passed by the Senate on August 5, 1957, with an amendment, that changed the wording of the original bill introduced on March 12, 1957, to "authorize the Secretary of the Interior" instead of the Secretary of Agriculture. S. 1552 was reported by the House Merchant Marine and Fisheries Committee, with amendments (H. Rept. No. 1212) on August 21, 1957. The bill as finally passed by the House was amended further to include the Secretary of Agriculture as cooperating agency. The bill was considered by the Senate on March 4, 1958, and the House amendments were accepted by the Senate and the bill was cleared for the President, and was signed on March 15, 1958 (P. L. No. 85-343). The bill as enacted reads as follows:

That the Secretary of the Interior is authorized and directed to establish an experiment station or stations for the purpose of carrying on a program of research and experimentation--

(1) to determine species of fishes most suitable for culture on a commercial basis in shallow reservoirs and flooded rice lands;

(2) to determine methods for production of fin-fishing fishes for stocking in commercial reservoirs;

(3) to develop methods for the control of parasites and diseases of brood fishes and of fingerlings prior to stocking;

(4) to develop economical methods for raising the more desirable species of fishes to a marketable size;

(5) to determine, in cooperation with the Department of Agriculture, the effects of fish-rice rotations, including crops other than rice commonly grown on rice farms, upon both the fish and other crops; and

(6) to develop suitable methods for harvesting the fish crop and preparing it for marketing, including a study of sport fishing as a means of such harvest.

For the purpose of carrying out the provisions of this Act, the Secretary of the Interior is authorized (1) to acquire by purchase, condemnation, or otherwise such suitable lands, to construct such buildings, to acquire such equipment and apparatus, and to employ such officers and employees as he deems necessary; (2) to cooperate with State and other institutions and agencies upon such terms and conditions as he determines to be appropriate; and (3) to make public the results of such research and experiments conducted pursuant to the first section of this Act.

The Department of Agriculture is authorized to cooperate in carrying out the provisions of this Act by furnishing such information and assistance as may be requested by the Secretary of the Interior.

There are hereby authorized to be appropriated such sums as may be necessary to carry out the provisions of this Act.

DISTRICT OF COLUMBIA FISH AND GAME LAWS: S. 532 (Beall) introduced in the first session of the 85th Congress, a bill to revise and modernize the fish and game laws of the District of Columbia, and for other purposes. Reported (S. Rept. No. 1388) by the Committee on the District of Columbia on March 13, 1958, with amendment.

S. 532 (Beall) passed the Senate as amended on March 17, 1958 and cleared for the House.

S. Rept. No. 1388, District of Columbia Fish and Game Laws, (March 13, 1958, 85th Congress, 2nd Session, to accompany S. 532), 12 pp. printed.

EXTENSION OF EXPORT CONTROL ACT OF 1949: (Hearings before the House Committee on Banking and Currency, House of Representatives, 85th Congress, 2nd Session, on H. R. 10127), 39 pp., printed. Contains statements submitted by the Secretary of Commerce and members of his staff plus data submitted by industry advisory committees.

FAIR LABOR STANDARDS ACT INCREASED COVERAGE: H. R. 11738 (Dent) and H. R. 11759 (Libonati) introduced in the House on March 28, 1958, bills to amend the Fair Labor Standards Act of 1938, as amended, to provide coverage for employees of employers who are engaged in activities affecting interstate commerce, to eliminate certain exemptions, and for other purposes;

to the Committee on Education and Labor. This bill is similar to 14 or more House bills introduced in the first session of the 85th Congress.

FISHERIES ASSISTANCE ACT OF 1958: H. R. 10976 (Lane) introduced in the House on February 25, 1958, a bill to provide a 5-year program of assistance to enable depressed segments of the fishing industry in the United States to regain a favorable economic status; to the Committee on Merchant Marine and Fisheries. H. R. 11004 (O'Neill) introduced in the House on February 26, 1958. These bills are similar to H. R. 10529 (Bates) and S. 3229 (Saltonstall).

See Commercial Fisheries Review, March 1958, p. 64, and April 1958, p. 83, for additional information on these bills.

FISHERIES COOPERATIVE MARKETING ACT AMENDMENT: S. 3530 (Payne and Smith of Maine) introduced in the Senate on March 20, 1958, a bill to amend the Fisheries Cooperative Marketing Act; to the Committee on Interstate and Foreign Commerce. This bill proposes to amend the Act entitled "An Act Authorizing Associations of Producers of Aquatic Products," approved June 25, 1934 (48 Stat. 1213; 15 U. S. C. 521-522), to be amended by adding the following:

"No association of persons engaged in the fishing industry as fishermen catching, collecting, or cultivating aquatic products, or as planters of aquatic products on public or private beds, and no officer, agent, employee, or member of any such association, shall be subject to the provisions of the Antitrust Acts with respect to any activity incident to the catching, collecting, cultivating, processing, or marketing of aquatic products. As used in this section, the term 'Antitrust Acts' shall have the meaning given to such term by section 4 of the Act entitled 'An Act to Create a Federal Trade Commission, to Define Its Powers and Duties, and for Other Purposes,' approved September 26, 1914 (38 Stat. 719, 15 U. S. C. 44)."

H. R. 11628 (McIntire) introduced in the House on March 25, 1958, H. R. 11701 (Hale) introduced March 27, 1958, and H. R. 11807 (Pelly) introduced on April 1, 1958, and similar to S. 3530.

FISHERIES POLICY AT "LAW OF THE SEA CONFERENCE": H. Con. Res. 288 (Pelly) a concurrent resolution introduced in the House on March 10, 1958, to express the sense of Congress that at the present United Nations Conference on the Law of the Sea, at Geneva, Switzerland, the United States should endeavor to conclude an agreement embodying the principal of abatement and conservation with respect to fishing and fisheries; to the Committee on Foreign Affairs. The concurrent resolution calls for the inclusion in any agreement reached at the United Nations Geneva Conference the means of protecting fishes (such as Alaska salmon) that spawn in one country and are later exploited by another country or countries.

FOREIGN TRADE BOARD: H. R. 11250 (Dorn) introduced in the House on March 10, 1958, and H. R. 11536 (Riley) introduced in the House on March 20, 1958, bills to amend the Tariff Act of 1930, amended; to the Committee on Ways and Means. The bills provide for a "United States

Foreign Trade Board" to replace the United States Tariff Commission. The new Board would consist of seven members appointed for seven years by the President by and with the advice and consent of Congress. The duties and responsibilities of the new Board are defined. The duties of the Board shall be to examine, study, and report annually to Congress on the subjects of international trade and its enlargement consistent with (1) a sound domestic economy, (2) our foreign trade policy, and (3) the trade aspects of our national security, and recommends to the Congress appropriate policies, measures, and practices. The new Board would have responsibilities similar to the present Tariff Commission plus additional duties and authority, including an important role in the negotiation and administration of United States tariffs. Effect would be to prohibit multilateral trade agreement negotiations, but it would authorize the President to enter into a "bilateral trade agreement with the government of a principal supplier foreign country. . . ." Final decisions on the Board's report would be made by Congress if the President rejected the findings of the Board.

LOAN FUND FOR FISHERIES: S. 3295 (Magnuson) a bill to increase the authorization for the Fisheries Loan Fund from \$10 to \$20 million. Reported (S. Rept. No. 1373) by the Senate Committee on Interstate and Foreign Commerce on March 11, 1958, without amendment.

S. Rept. No. 1373, Increasing Fisheries Loan Fund Authorization Under Fish and Wildlife Act of 1956 (March 11, 1958, 85th Congress, 2nd Session, to accompany S. 3295), 5 p., printed. Describes the purpose of bill, operation of the fisheries loan fund, the status of fund as of February 28, 1958, and supporting statements from Government officials.

MARKETING FACILITIES IMPROVEMENT: H. Res. 485 (Delaney), a resolution providing for the consideration and 2 hours of debate on H. R. 4504 (Cooley) introduced in the first session of the 85th Congress, a bill to encourage the improvement and development of market facilities for handling perishable agricultural commodities (including seafood); with amendment. Reported by Committee on Rules (H. Rept. No. 1394) and referred to the House calendar.

MAXIMUM WORKWEEK REDUCTIONS: H. R. 11741 (Dent) and H. R. 11755 (Libonati) introduced in the House on March 28, 1958, bills to reduce the maximum workweek under the Fair Labor Standards Act of 1938, as amended, to 35 hours, and for other purposes; to the Committee on Education and Labor. Similar bills were introduced in the first session of the 85th Congress.

MINIMUM HOURLY WAGE: H. R. 11740 (Dent) and H. R. 11756 (Libonati) introduced in House on March 28, 1958, bills to raise the minimum hourly wage under the Fair Labor Standards Act of 1938, as amended, to \$1.25 an hour, and for other purposes; to the Committee on Education and Labor. These bills are similar to 27 or more bills introduced in the House during the first session of the 85th Congress.

NAVIGATION AND INSPECTION LAWS AMENDMENT: S. 3349 (Magnuson) introduced in the

Senate on February 25, 1958, a bill to repeal and amend certain statutes fixing or prohibiting the collection of fees for certain services under the navigation and vessel inspection laws; to the Committee on Interstate and Foreign Commerce. This bill would repeal the statutory provisions against the charging and collection of fees by collectors or other offices of customs or by the U. S. Coast Guard for services provided vessels (including fishing vessels). Although the bill also would repeal some fees now collected, on the other hand, many services now rendered to vessels, owners of vessels, and masters would be on a fee basis.

NORTH PACIFIC FUR SEAL ACT OF 1958: Executive Communication: Letters from the Acting Secretary of State, transmitting a draft of proposed legislation to give effect to the Interim Convention on Conservation of North Pacific Fur Seals, signed at Washington, February 9, 1957, and for other purposes (with accompanying papers); to the Senate Committee on Interior and Insular Affairs on March 12, 1958 and to the House Committee on Merchant Marine and Fisheries on March 13, 1958.

NORTH PACIFIC FUR SEALS INTERIM CONVENTION: S. 3507 (Murray) introduced in the Senate on March 18, 1958, a bill to give effect to the Interim Convention on Conservation of North Pacific Fur Seals, signed at Washington, February 9, 1958, and for other purposes; to the Committee on Interior and Insular Affairs. Also a similar House bill H. R. 11582 (Bonner) introduced on March 24, 1958; to the Committee on Merchant Marine and Fisheries.

SMALL BUSINESS INVESTMENT CORPORATION: H. R. 10980 (Muller) introduced in the House on February 25, 1958, a bill to establish a Small Business Investment Corporation to furnish needed equity capital to small business concerns in the United States; and for other purposes; to the Committee on Banking and Currency.

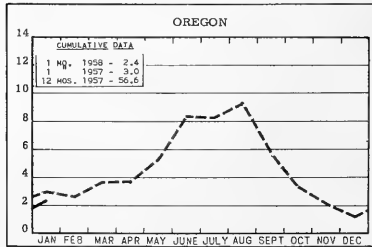
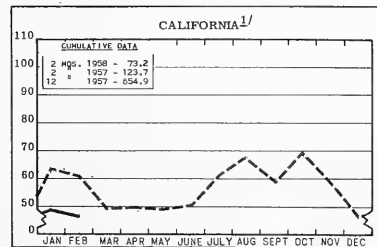
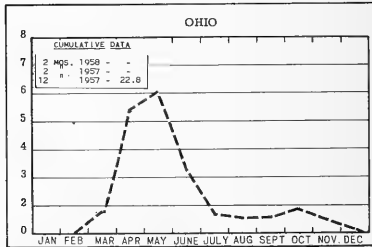
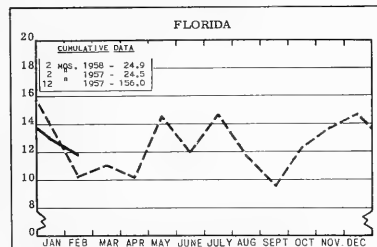
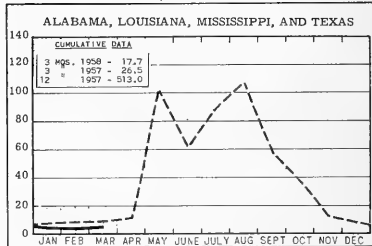
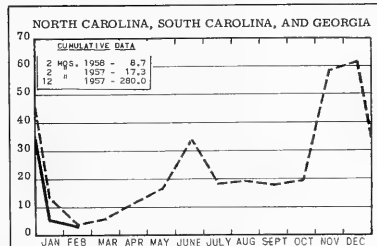
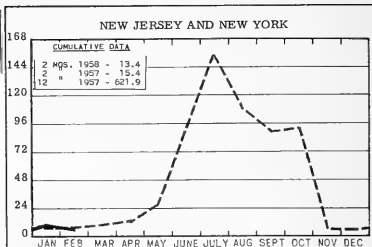
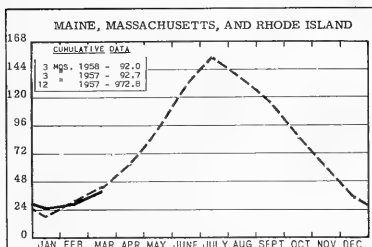
SMALL BUSINESS TAX RELIEF: H. R. 11788 (Que) introduced in the House March 31, 1958, a bill to provide a minimum initial program of tax relief for small business and for persons engaged in small business; to the Committee on Ways and Means. Similar to H. R. 6407 (Alger) introduced in the first session of the 85th Congress and eight or more other House bills and S. 3194 (Sparkman and others) introduced in the Senate on January 30, 1958.

TRADE AGREEMENT ACT EXTENSION: H. R. 11119 (Hoeven), H. R. 11124 (Patterson), H. R. 11130 (Byrd), and H. R. 11134 (Fisher) introduced in the House on March 4, 1958; identical bills to extend the authority of the President to enter into trade agreements under Section 350 of the Tariff Act of 1930, as amended, and for other purposes; to the Committee on Ways and Means. Also H. R. 11462 (Simpson) and H. R. 11463 (Davis) introduced in the House on March 18, 1958 and H. R. 11783 introduced on March 31, 1958. Similar to H. R. 10818 (Davis of Georgia) introduced on February 19, 1958. These bills are closely related to H. R. 10368 (Mills) except that extension of the President's authority to enter into trade agreements is limited to one year instead of the five-year extension provided for in H. R. 10368. H. R. 10368 was the subject of extended hearings from February 17 to March 25, 1958. See Commercial Fisheries Review, March 1958, p. 65 and April 1958 p. 84, for other related bills.



CHART 1 - FISHERY LANDINGS for SELECTED STATES

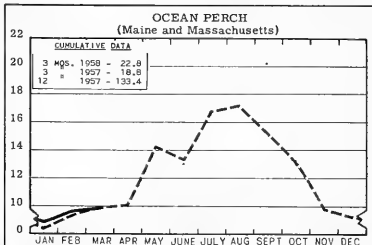
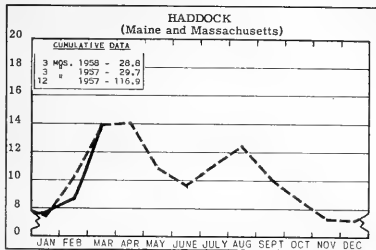
In Millions of Pounds



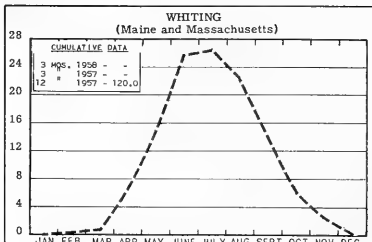
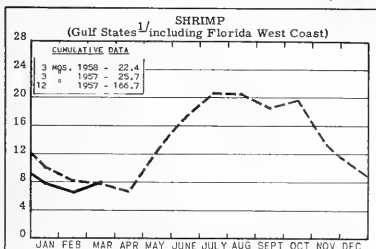
^{1/}ONLY PARTIAL—INCLUDING PRODUCTION OF MAJOR FISHERIES AND MARKET FISH LANDINGS AT PRINCIPAL PORTS.

CHART 2 - LANDINGS for SELECTED FISHERIES

In Millions of Pounds

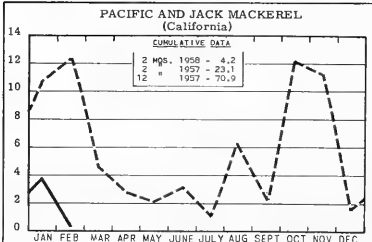
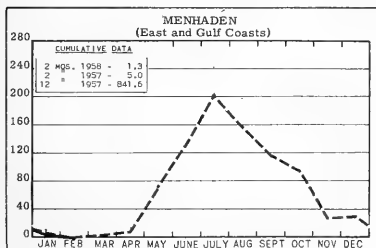


In Millions of Pounds



^{1/2}L.A. & A.L.A. DATA BASED ON LANDINGS AT PRINCIPAL PORTS AND ARE NOT COMPLETE.

In Thousands of Tons



In Thousands of Tons

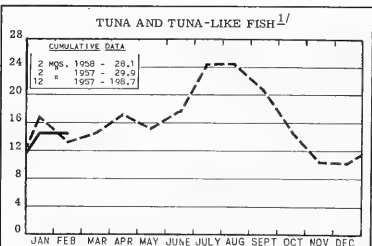
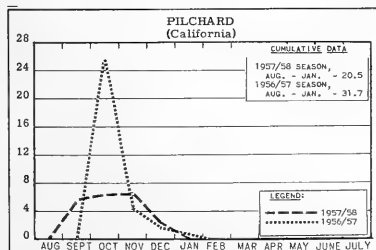
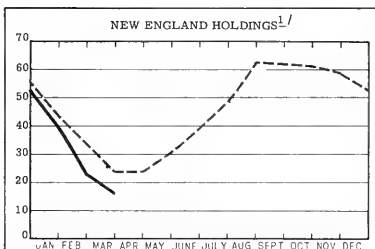
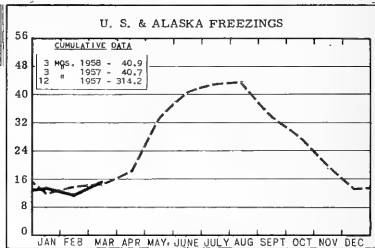
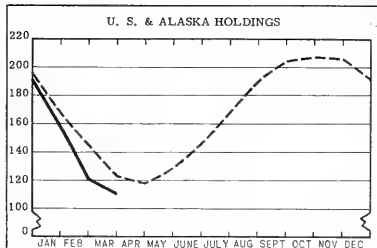
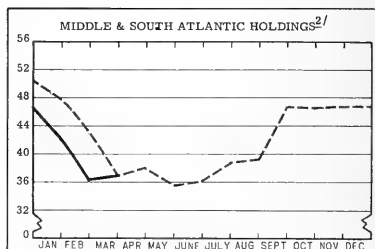


CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

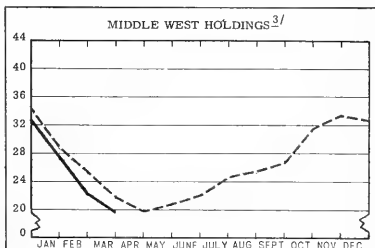
In Millions of Pounds



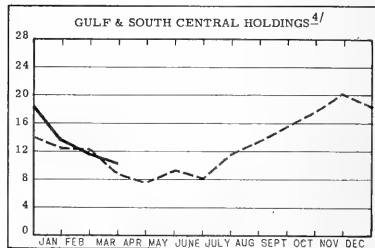
^{1/}MAINE, MASSACHUSETTS, RHODE ISLAND, AND CONNECTICUT.



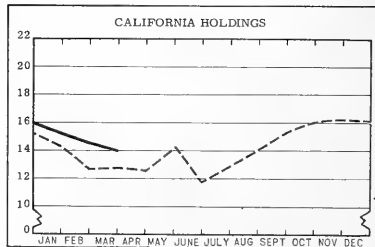
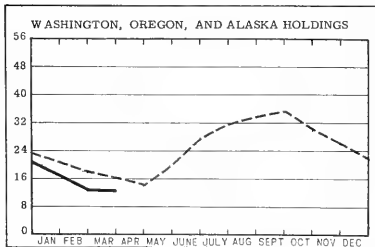
^{2/}ALL EAST COAST STATES FROM N.Y. SOUTH.



^{3/}OHIO, IND., ILL., MICH., WIS., MINN., IOWA, MO., N. DAK., NEBR., & KANS.



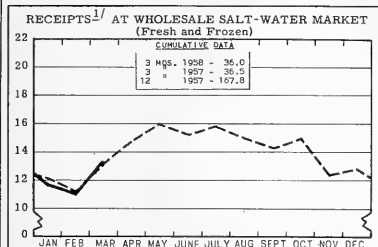
^{4/}ALA., MISS., LA., TEX., ARK., KY., & TENN.



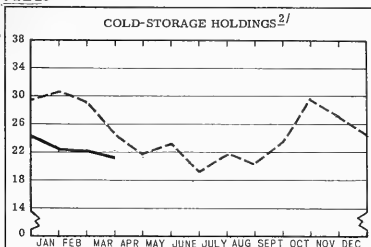
* Excludes salted, cured, and smoked products.

CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS

In Millions of Pounds

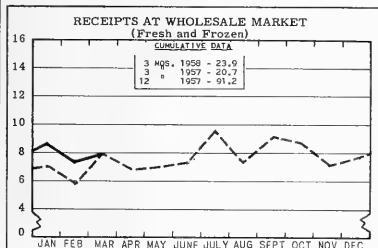


NEW YORK CITY

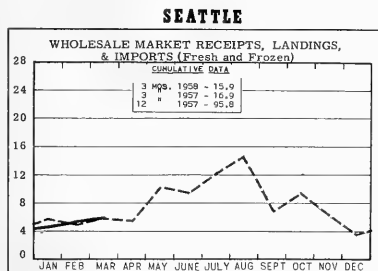
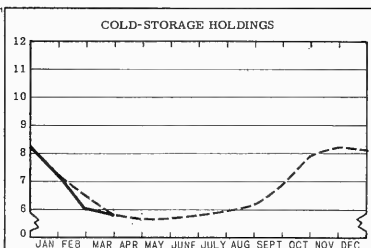


^{1/}INCLUDE TRUCK AND RAIL IMPORTS FROM CANADA AND DIRECT VESSEL LANDINGS AT NEW YORK CITY.

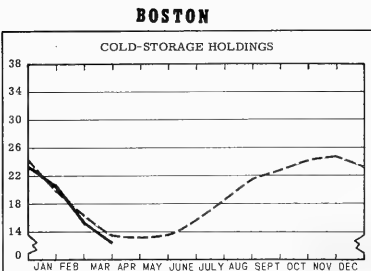
^{2/}AS REPORTED BY PLANTS IN METROPOLITAN AREA.



CHICAGO



SEATTLE



BOSTON

LEGEND:
 — 1958
 - - - 1957

CHART 5 - FISH MEAL and OIL PRODUCTION - U.S. and ALASKA

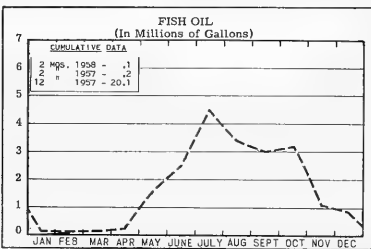
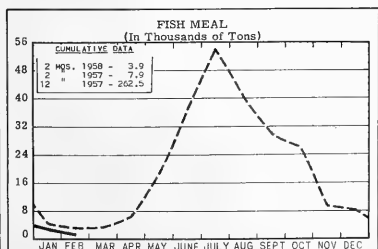
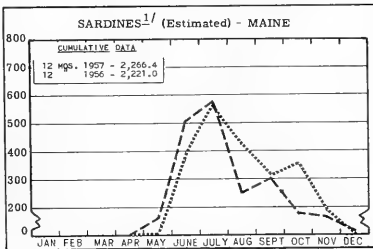
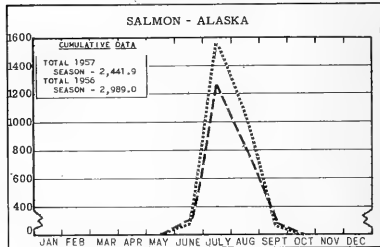
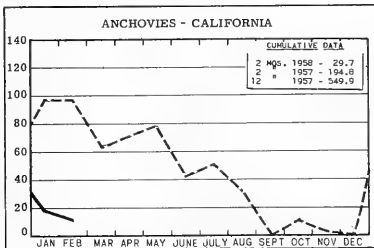
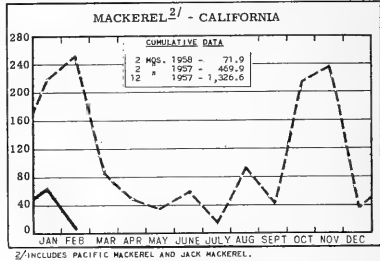
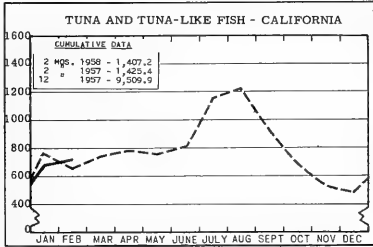


CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

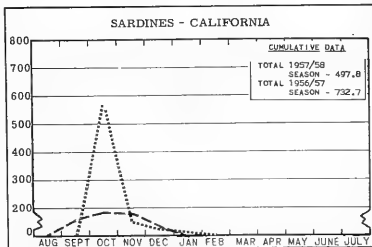
In Thousands of Standard Cases

LEGEND:
 — 1958
 - - - 1957
 1956



STANDARD CASES

Variety	No. Cans	Designation	Net Wgt.
SARDINES	100	1/2 drawn	3 1/2 oz.
SHRIMP	48	--	5 oz.
TUNA	48	# 1/2 tuna	6 & 7 oz.
PILCHARDS	48	# 1 oval	15 oz.
SALMON	48	1-lb. tall	16 oz.
ANCHOVIES	48	1/2-lb.	8 oz.



Legend:
 - - - 1957/58
 1956/57

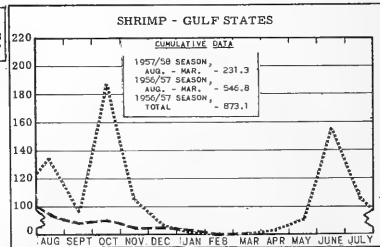
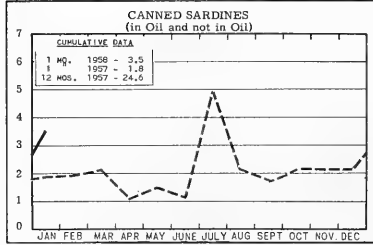
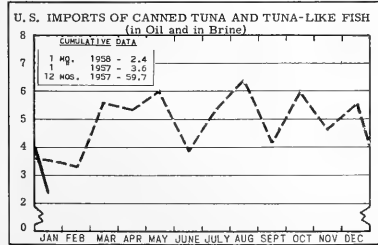
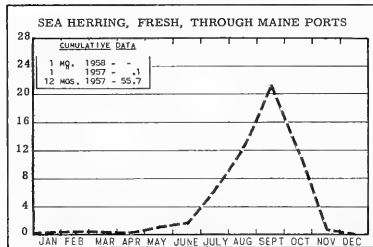
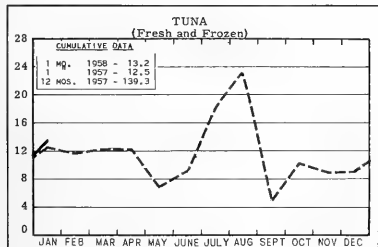
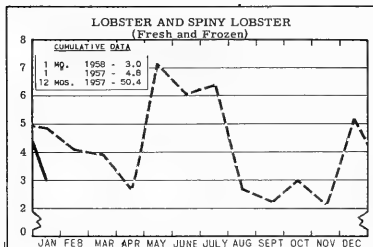
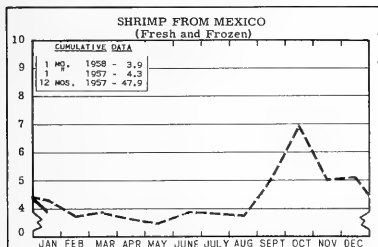
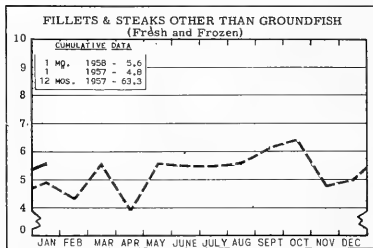
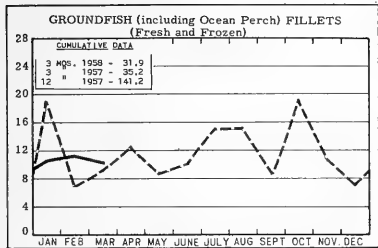


CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds





FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE DIVISION OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

- CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES AND ALASKA.
 SL - STATISTICAL SECTION LISTS OF DEALERS IN AND PRODUCERS OF FISHERY PRODUCTS AND BYPRODUCTS.
 SSR - FISH - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).
 SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

- | Number | Title |
|----------|---|
| CFS-1614 | - Alaska Fisheries, 1956 Annual Summary (revised), 8 pp. |
| CFS-1694 | - Lake Fisheries, 1956 Annual Summary, 11 pp. |
| CFS-1707 | - Frozen Fish Report, December 1957, 8 pp. |
| CFS-1711 | - Pacific Coast State Fisheries, 1956 Annual Summary, 6 pp. |
| CFS-1720 | - Mississippi River Fisheries, 1956 Annual Summary, 8 pp. |
| CFS-1724 | - Massachusetts Landings, August 1957, 5 pp. |
| CFS-1727 | - Louisiana Landings, November 1957, 2 pp. |
| CFS-1728 | - New York Landings, December 1957, 4 pp. |
| CFS-1730 | - Texas Landings, October 1957, 3 pp. |
| CFS-1732 | - Texas Landings, November 1957, 3 pp. |
| CFS-1733 | - Frozen Fish Report, January 1958, 8 pp. |
| CFS-1734 | - Manufactured Fishery Products, 1956 Annual Summary, 7 pp. |
| CFS-1736 | - Florida Landings, December 1957, 6 pp. |
| CFS-1737 | - Massachusetts Landings, September 1957, 5 pp. |
| CFS-1738 | - New Jersey Landings, December 1957, 3 pp. |
| CFS-1739 | - Maine Landings, December 1957, 3 pp. |
| CFS-1740 | - Massachusetts Landings, October 1957, 5 pp. |
| CFS-1741 | - Alabama Landings, December 1957, 2 pp. |
| CFS-1743 | - Texas Landings, December 1957, 3 pp. |
| CFS-1744 | - South Carolina Landings, 1957 Annual Summary, 3 pp. |
| CFS-1845 | - Mississippi Landings, December 1957, 2 pp. |

Wholesale Dealers in Fishery Products (Revised):

- SL-5 - Connecticut, 1957.
 SL-22 - Oregon, 1957.
 SL-23 - Washington, 1956.
 SL-25 - Wisconsin (Lakes Area), 1957.
 SL-27 - Indiana (Lake Michigan Area), 1957.
 SL-34 - Wisconsin (Mississippi River and Tributaries Area), 1957.

SL-35 - Illinois (Mississippi and Illinois River Area), 1957.

SL-39 - Tennessee, 1957.

SL-40 - Oklahoma, 1957.

SSR-Fish. No. 234 - Physical Oceanographic, Biological, and Chemical Data--South Atlantic Coast of the United States--M/V THEODORE N. GILL Cruise 4, by William W. Anderson and Jack W. Gehringer, 196 pp., illus., December 1957.

SSR-Fish. No. 242 - Drift Bottle Records for Gulf of Maine and Georges Bank, 1931-56, by Dean F. Bumpus and C. Godfrey Day, 64 pp., illus., November 1957.

SSR-Fish. No. 243 - Wind Atlas of the North Pacific, by James W. McGary and Thomas M. Naito, 39 pp., illus., September 1957.

SSR-Fish. No. 246 - Diversion of Adult Salmon by an Electrical Field, by Roger E. Burrows, 15 pp., illus., December 1957. This report is concerned with a general description of an electrical weir, the factors influencing its efficient operation, the reaction of salmon to the electrical field, and the application of the weir in salmon culture. An electrical weir consisting of a line of hanging electrodes and a submerged ground line has proved satisfactory for the diversion of adult salmon. The electrical field is created by 110-volt, single phase, 60-cycle, alternating electrical current available from most commercial sources. The optimum operating conditions for a weir of this type require minimum stream velocity within the electrical field of 3 feet per second, minimum barrier voltage of 0.5 volts per inch, and minimum field length of 10 feet with a voltage gradient which may vary within the range of from 0.3 to 0.7 volts per inch in the effective field. Adult salmon, once conditioned to the electrical stimulus, may be diverted from their normal migration path into an alternate route by the electrical field. With adequate water velocities and voltage gradients the electrical weir is a positive barrier to the upstream migration of adult fish. Downstream migrant salmon fingerlings pass through the weir with impunity. The weir is generally applicable to the varying conditions encountered in salmon streams of the Pacific Coast.

Relative Abundance of Maryland Shad, 1944-52, by Charles H. Walburg, Research Report 38, 18 pp., illus., processed. (Also Contribution No. 110, Chesapeake Biological Laboratory, Maryland Department of Research and Education, Solomons, Md.) Each year, the Maryland Department of Research and Education obtains catch and effort statistics from all commercial shad

fishermen in Maryland waters as part of the Maryland Management Plan. These data for the years 1944 to 1952 were used in conjunction with a tagging experiment, to estimate fishing effort, fishing rate, catch, size of run, and spawning escapement for each of these years. It was found that effort had increased almost twofold, despite the operation of a plan designed to keep it constant. The evaluation of the relation between factors which might cause changes in the size of the Maryland shad population is complicated because the effect of the Virginia shad fishery on the Maryland shad population is unknown. Without knowledge of this effect, the influence of other factors affecting the Maryland population is obscured.

Sep. No. 506 - Oysters.

Sep. No. 507 - Japanese High-Seas Salmon Fishery in the North Pacific Since 1952.

Sep. No. 508 - Research in Service Laboratories (April 1958): Contains these articles--"Fish-Oil Research at the Seattle Fishery Technological Laboratory;" "Effect of Season, Fishing Area, and Processing Techniques on Physical Constants of Fish Body Oils;" and "New Methods of Packaging Fish Fillet Blocks."

THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED.

California Fishery Products Monthly Summary, January 1958, 10 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif.) California cannery receipts of raw tuna and tunalike fish, herring, mackerel, anchovies, and squid; pack of canned tuna, herring, mackerel, anchovies, and squid; market fish receipts at San Pedro, Santa Monica, San Diego, and Eureka areas; California imports; canned fish and frozen shrimp prices; for the month indicated.

Gulf Monthly Landings, Production, and Shipments of Fishery Products, January 1958, 5 pp. (Market News Service, U. S. Fish and Wildlife Service, 609-611 Federal Bldg., New Orleans 12, La.) Gulf States shrimp, oyster, finfish, and blue crab landings; crab meat production; LCL express shipments from New Orleans; and wholesale prices of fish and shellfish on the New Orleans French Market; for the month indicated.

Monthly Summary of Fishery Products in Selected Areas of Virginia, North Carolina, and Maryland, February 1958, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 So. King St., Hampton, Va.) Fishery landings and production for the Virginia areas of Hampton Roads, Lower Northern Neck, and Eastern Shore; the Maryland areas of Crisfield, Ocean City, and Cambridge; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data; for the month indicated.

New England Fisheries--Monthly Summary, January 1958, 21 pp. (Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston 10, Mass.) This is the first issue

of New England Fisheries--Monthly Summary. It will be a regular monthly feature, and will supplement and replace the Boston Fishery Products Monthly Summary. The new summary, incorporating many new features, covers: review of the principal New England fishery ports; food fish landings by ports and species; industrial fish landings and ex-vessel prices; imports; cold storage stocks of fishery products in New England warehouses; fishery landings and ex-vessel prices for ports in Massachusetts (Boston, Gloucester, New Bedford, Provincetown, and Woods Hole), Maine (Portland and Rockland), Rhode Island (Point Judith), and Connecticut (Stonington); frozen fishery products prices to primary wholesalers at Boston, Gloucester, and New Bedford; and landings and ex-vessel prices for fares landed at the Boston Fish Pier and sold through the New England Fish Exchange; for the month indicated.

THE FOLLOWING SERVICE PUBLICATIONS ARE FOR SALE AND ARE AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON 25, D. C.

Accelerated Development of Testis after Unilateral Gonadectomy, with Observations on Normal Testis of Rainbow Trout, by O. H. Roberson, Fishery Bulletin 127 (From Fishery Bulletin of the Fish and Wildlife Service, vol. 58), 25 pp., illus., printed, 25 cents, 1958.

Alaska Fishery and Fur-Seal Industries, 1955, by Seton H. Thompson, Statistical Digest No. 40, 88 pp., illus., printed, 40 cents, 1957. Detailed reports and statistical tables concerning the operation and yield of the various fishery industries are presented, with added data on certain related matters, particularly the condition of the fishery resources. Under the section on fishery industries, the following subjects are covered: court decisions, Alaska Department of Fisheries; research; exploratory fishing investigations; administration; management; and general statistics on salmon, herring, halibut, shellfish, and miscellaneous fishery products. The second section on the Pribilof Islands fur-seal industry covers administration, fur-seal population studies, and general statistics on the fur seals taken in 1955. A statement is also included on sealing privileges accorded aborigines.

Observations on the Spearfishes of the Central Pacific, by William F. Royce, Fishery Bulletin 124 (From Fishery Bulletin of the Fish and Wildlife Service, vol. 57), 60 pp., illus., printed, 40 cents, 1957. The taxonomy, distribution, size, food, and spawning habits of spearfishes are considered. Observations on several hundred spearfishes caught in the central equatorial Pacific and in the Hawaiian fishery are presented, together with an extensive review of Japanese and other literature. A morphometric study shows marked variation in all diagnostic characters and allometric growth in many. Six species are recognized: swordfish, Xiphias gladius, shortnose spearfish, Tetrapturus angustirostris, sailfish, Istiophorus orientalis, black marlin, Istiompax marlina, striped marlin, Makaira audax, and Pacific blue marlin, Makaira amplax. All six species are shown to be fishes of the high seas of wide distribution in the Pacific, but with different centers of abundance. The swordfish and striped marlin prefer

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the more temperate waters, the Pacific blue marlin the equatorial region, and the black marlin the coastal areas off Asia, America, and Australia. Maximum known weights of the Pacific forms (in pounds) are as follows: swordfish--1,061, shortnose spearfish--114, sailfish--132, black marlin--1,560, striped marlin--483, and Pacific blue marlin--1,450. All are broadly carnivorous on fish and cephalopods. The Pacific blue marlin probably spawns throughout most of the year in equatorial waters.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATION OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

AUSTRALIA:

The Systematic Position of the School Prawn from Western Australia, by A. A. Racek, *Fisheries Bulletin No. 6*, 13 pp., illus., printed. Superintendent of Fisheries, Western Australia Fisheries Department, Perth, Australia. An illustrated description of a commercially-important shrimp species of the genus Metapenaeus from Western Australia.

BRAZIL:

Introducao ao Estudo das Pescas no Brazil (Introduction to the Study of Fisheries in Brazil), vols. I and II, 323 pp. text, 8 maps and charts; and 193 pp. text, 2 map folders; respectively, illus., printed in Portuguese. Missao Portuguesa de Pesca no Brazil, Rio de Janeiro, Brazil, 1956. A two-volume report on fisheries in Brazilian maritime waters and the Amazon River, prepared by a mission of Portuguese fishery experts. Volume I describes the present status of the fisheries of the most progressive nations of the world; the status of Brazilian fisheries; general development of the fisheries--including reports on government projects for port improvements, marketing and industrial aids, and technical assistance; and a detailed description of the various fishery zones of Brazil. Volume II is devoted largely to maps of Brazilian waters and descriptions of tests performed by the Portuguese Mission with trawl nets.

Perspectivas da Pesca e Piscicultura na Bahia (Prospects of Fishery and Fish Culture in Bahia), by Rui Simeos de Menezes, 35 pp., printed in Portuguese. (Reprinted from *Bulletin No. 17, Servico de Divulgacao da Secretaria da Agricultura Industria e Comercio do Estado da Bahia, May-August 1956*.) Servico Piscicultura, Governo da Bahia, Bahia, Brazil, 1956. Reports on the possibilities for fisheries and fish culture in the marine and inland waters of the state of Bahia, Brazil. Contains a 19-page bibliography of pertinent information.

CANADA:

The Fishes of Labrador, by Richard H. Backus, *Bulletin of the American Museum of Natural History*, vol. 113, article 4, 55 pp., illus., printed, \$2. American Museum of Natural History, New York, N. Y., 1957.

Journal of the Fisheries Research Board of Canada, vol. 15, no. 1, January 1958, 113 pp., illus., printed. Queen's Printer and Controller of Stationery, Ottawa, Canada. Contains, among others, the following articles: "The Abundance and Distribution of the Northern Sea Lion (*Eumetopias jubata*) on the Coast of British Columbia," by Gordon C. Pike and Brian E. Maxwell; "The Estimation of Population Size by a Marking and Recapture Procedure," by D. B. DeLury; and "Redescription of *Lampetra ayresii* (Günther) of Western North America, a Species of Lamprey (Petromyzontidae) Distinct from *Lampetra fluviatilis* (Linnaeus) of Europe," by Vadim D. Vladykov and W. I. Follett.

CEYLON:

Operation of Trawlers and Fishing Vessels (Annual Report and Audited Accounts for 1953-54), *Trading Accounts Series No. 53/1957*, 12 pp., printed, 40 cents. Government Publications Bureau, Colombo, Ceylon, November 1957. A review of the activities of Ceylon's Department of Fisheries in its operation of trawlers and fishing vessels during 1953-1954. A balance sheet and financial statements for the operation of trawlers and fishing vessels are included.

COD:

Changes in the Skin Flora of Cod After Washing and Icing, by D. L. Georgala, 7 pp., illus., printed. (Reprinted from the *Journal of Applied Microbiology*, vol. 20, no. 1, April 1957, pp. 23-29.) Torry Research Station, Food Investigation Organization, Department of Scientific and Industrial Research, Aberdeen, Scotland.

"Depuis Quelques Annees, la Production Francaise de Morue Salee a Pris une des Premieres Places dans le Monde" (For Several Years the French Production of Salted Cod Has Taken First Place in World Production), by M. Sauveroche, article, *La Peche Maritime*, Annee 37, No. 959, February 1958, pp. 75-77, illus., printed in French. *La Peche Maritime*, 190 Boulevard Haussmann, Paris, France.

"L'Exportation de la Morue" (The Export of Cod), by Geep, article, *La Peche Maritime*, Annee 37, No. 959, February 1958, pp. 72-74, illus., printed in French. *La Peche Maritime*, 190 Boulevard Haussmann, Paris, France.

Nucleotides in the Skeletal Muscle of Coding (GADUS CALLARIAS), by N. R. Jones and J. Murray, *DSIR Food Investigation Memoir No. 1071*, 1 p., printed. (Reprinted from *Proceedings of the Biochemical Society*, vol. 66, Part 1, March 1957, p. 5.) Torry Research Station, Aberdeen, Scotland.

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"La Production de Morue en France et Dans le Monde" (The Production of Cod in France and the World), article, *La Pêche Maritime*, Année 37, No. 959, February 1958, pp. 69-71, illus., printed in French. La Pêche Maritime, 190 Boulevard Haussmann, Paris, France.

"La Vente en France de la Morue Salee" (The Sale of Salted Cod in France), by M. Hardy, article, *La Pêche Maritime*, Année 37, No. 959, February 1958, pp. 79-80, illus., printed in French. La Pêche Maritime, 190 Boulevard Haussmann, Paris, France.

COMMISSIONS:

Gulf States Marine Fisheries Commission Eighth Annual Report 1956-57 (to the Congress of the United States and to the Governors and Legislators of Alabama, Florida, Louisiana, Mississippi, and Texas), 33 pp., illus., printed. Gulf States Marine Fisheries Commission, 312 Audubon Bldg., New Orleans 16, La. Contains the Commission's activities for the period October 1956-October 1957, with a summary of some of the points of general interest in the compact between the States of Alabama, Florida, Louisiana, Mississippi, and Texas. This report briefly enumerates and summarizes the activities and accomplishments of those agencies with which the organization is directly associated. Also included are short discussions of the U. S. Fish and Wildlife Service activities in technological and biological research, exploratory fishing in the Gulf area, and the Gulf fishery statistical program. A financial report of the Commission is included.

CRABS:

"Crabbing. . . and Crabs," by Eduard Waldo and Percy Viosca, Jr., articles, *Louisiana Conser-vationist*, vol. 10, no. 1, January 1958, pp. 10-13, 22-23, illus., printed. Louisiana Wild Life and Fisheries Commission, 126 Civil Courts Bldg., New Orleans, La. Dual articles, the first of which describes the methods of taking crabs and gives specifications for the construction of crab pots and traps. The second article describes briefly the various crabs that inhabit the coastal waters of Louisiana, with emphasis on the life history of the blue crab.

CUBA:

The Present Situation in the Fishing Industry of Cuba, by Jose A. Suarez Caabro, Monografía No. 3, 8 pp., printed. (Reprinted from Proceedings of the Gulf and Caribbean Fisheries Institute, Ninth Annual Session, November 1956, pp. 136-143.) Universidad de Villanueva, Laboratorio de Biología Marina, Havana, Cuba. Describes in general the fishing industry of Cuba, including the annual production of fish and shellfish and the types of fishing vessels which are used in the fisheries. Further details are given individually on the shrimp, spiny lobster, shark, tuna, grouper, and snapper fisheries. Information is also included on imports and exports of fishery products.

EELS:

"The Eel. . . Truly a Remarkable Creature," by Roger M. Latham, article *Pennsylvania Angler*,

vol. 27, no. 2, February 1958, pp. 2-7, illus., printed, 10 cents. Pennsylvania Fish Commission, South Office Bldg., Harrisburg, Pa. An account of the American eel and its interesting life history. Methods of taking eels commercially are described as well as ways used by the sports fishermen. Methods of cleaning and preparation for smoking and pickling are also described.

ELECTRICAL FISHING:

Electrical Fishing, by P. F. Meyer-Waarden, FAO Fisheries Study No. 7, 85 pp., illus., printed, 5s. (US\$1). (For sale by International Documents Service, Columbia University Press, 2960 Broadway, New York 27, N. Y.) Food and Agriculture Organization of the United Nations, Rome, Italy, 1957. This report is intended to eliminate confused ideas and views about electrical fishing, which hamper its future development. The possibilities of its practical use for fresh-water and sea fisheries are explained, and the natural and technological factors restricting that technique are considered. A survey of the various gear at present used and a description of the methods of using them, and of the electro-technical and electro-physiological basic factors, complete the survey of the present state of electrical fishing. The four chapters, which make up this report, include information on the basic principles of electrical fishing, application of electric current in fishing, protective measures against the misuse of electrical fishing gear, and importance of the electrical fishing technique in fisheries. Also includes a bibliography on electrical fishing.

FEEDSTUFFS:

Animal Feedstuffs (Regulations Governing Their Manufacture and Sale in European Countries), by R. Ricard and T. Threlkeld, 137 pp., printed, 5s. (US\$1). Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy. (For sale by International Documents Service, Columbia University Press, 2960 Broadway, New York 27, N. Y.) The object of this work is to set forth the various laws and regulations adopted in European countries concerning the manufacture and sale of animal feeds, especially compound feeds, as well as to describe the experience gained from them. In addition, the study provides the necessary background material from which possible uniform regulations may be made and which, at the same time, provides farmers with the required guarantees concerning the source and quality of the various ingredients in the compound. On the basis of information accumulated from all FAO Member Governments in Europe, the Legislative Service of the Organization prepared this study covering regulations in eighteen countries as at the beginning of 1957, excluding only Turkey and Yugoslavia, since there are in these countries no special regulations on the subject. This publication refers not only to regulations affecting compound feeds, but also to those concerning unmixed feeds, for it was found to be impracticable to separate these two aspects in the regulations that were studied. In addition, the material has been presented as far as possible on a uniform basis so as to facilitate

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comparison and the work of keeping it up to date. Countries covered by this report are: Austria, Belgium, Denmark, Finland, France, Federal Republic of Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

FILLETS:

The Expressible Fluid of Fish Fillets. V--Cell Damage in Fillets Frozen from One Side, the General Picture, by R. M. Love, DSIR Food Investigation Memoir No. 1066, 5 pp., illus., printed. (Reprinted from the Journal of the Science of Food and Agriculture, no. 4, 1957, pp. 238-242.) Department of Scientific and Industrial Research, Torry Research Station, Aberdeen, Scotland.

FISH COOKERY:

Recetario para la Preparacion Culinaria de los Pescados de Mar y Mariscos Congelados (Recipe Book for Cooking Frozen Fish and Shellfish), 56 pp., illus., printed in Spanish. "Comisariato" Puccini, Banfi y Cia., Avenida 28, No. 22-63/69, Bogota, Colombia, 1954.

FISH INSPECTION:

"Fresh Fish Quality Assessment in Commercial Fish Inspection," by P. Jensen, article, World Refrigeration, vol. 8, no. 3, March 1957, pp. 168-172, printed. (Paper read at the FAO International Meeting of the Fish Processing Technologists held in Rotterdam, Netherlands, June 23-29, 1956.) World Refrigeration, 140 Cromwell Rd., London, S. W. 7, England.

FOOD ADDITIVES:

Report of Joint FAO/WHO Expert Committee on Food Additives, Nutrition Meetings Report No. 15, 27 pp., printed, 1s. 6d. (30 U. S. cents). Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy. (For sale by International Documents Service, Columbia University Press, 2960 Broadway, New York 27, N. Y.) Following two FAO/WHO reviews of the problems of food additives in 1954 and 1955, a further step was taken the next year with establishment of a Joint FAO/WHO Expert Committee which met in Rome, Italy, to formulate general principles governing the use of food additives. This is the report of that Expert Committee. Basically, the eight-member Committee restricted its discussions to "non-nutritive substances added intentionally to food, generally in small quantities, to improve its appearance, flavor, texture or storage properties." Substances which are added primarily for their nutritive value, such as minerals and vitamins, were not considered by the Committee, although it was recognized that in certain instances chemicals added to food to impart a desired quality or for some other functional purpose may also be of nutritional value. The report contains brief chapters on "Circumstances Governing the Use of Food Additives," "Other Factors to be Taken into Account in Food Additives Control," "Recommendations to FAO and WHO" and an over-all "Summary" of conclusions reached by the Committee. In ad-

dition, there is a list of participants, including observers invited by FAO to attend the discussions.

FOOD AND AGRICULTURAL ORGANIZATION:

General Fisheries Council for the Mediterranean--Proceedings and Technical Papers, No. 1, 99 pp., December 1952; No. 2, 361 pp., 1954; No. 3, 518 pp., 1955; illus., printed. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy. (For sale by International Documents Service, Columbia University Press, 2960 Broadway, New York 27, N. Y.) Three publications, respectively covering the inaugural, second, and third meetings of the General Fisheries Council for the Mediterranean.

FOODFISH:

Foodfish for the Future, by Charles P. Selden and Irving W. Jones, Educational Bulletin No. 1, 21 pp., illus., printed. Fish Commission of Oregon, Portland, Oreg., 1958. Includes information on what kinds of foodfish are caught in Oregon, who manages foodfish resources, how are foodfish resources managed, and putting the management program into action. Also includes information on hatcheries which are an important part of the salmon management program, and how you can help conserve foodfish resources.

GEAR:

The Baird Sledge Dredge and Its Handling, Laboratory Leaflet No. 15, 6 pp., illus., processed. Ministry of Agriculture, Fisheries and Food, Fisheries Laboratory, Lowestoft, England, 1957. Presents instructions on rigging, shooting and hauling, and tooth-setting, of the Baird sledge dredge for scallop fishing. Contains detailed diagrams of the dredge and its sustaining derrick and slip hook. The concluding paragraphs give comparisons with standard dredges, showing the advantages of using the Baird sledge dredge.

GENERAL:

Accordo tra L'Italia e la Jugoslavia Relativo alla Pesca da Parte di Pescatori Italiani nelle Acque Jugoslave e Scambi di Note (Agreement Between Italy and Yugoslavia on Fishing by Italian Fishermen in Yugoslavia Waters and Exchange of Note), Trattati e Convenzioni (Treaties and Conventions), 13 pp., printed. Tipografia Riserata del Ministero Degli Affari Esteri, Rome, Italy, 1956.

A Collection of Drawings of Fishes Ascribed to J. P. Kirtland (1793-1877), in the Library of Bowdoin College, by James M. Moulton, Brevlora, Museum of Comparative Zoology, No. 80, 4 pp. text, 2 pp. photographs, printed. Department of Biology, Bowdoin College, Brunswick, Me., September 30, 1957. A very brief report announcing the location of historically-significant fishery drawings at Bowdoin College, Me.

HERRING:

A Bibliography of the Herring (CLUPEA HARENGUS and C. FALLASII), by Leslie W. Scattergood, Research Bulletin No. 26, 108 pp., printed.

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Department of Sea and Shore Fisheries, Augusta, Me., October 1957. A bibliography dealing primarily with the biology of the herring, compiled as a result of the herring investigation carried on jointly by the U. S. Fish and Wildlife Service, the Maine Department of Sea and Shore Fisheries, and the Maine Sardine Industry.

HONG KONG:

Hong Kong Annual Departmental Report by the Registrar of Cooperative Societies and Director of Marketing for the Financial Year 1956-57, 41 pp., illus., printed, \$3. S. Young, Acting Government Printer, Government Press, Java Road, Hong Kong. Reports on the accomplishments of Hong Kong's Cooperatives and Marketing Department during the 1956-57 fiscal year. Covers the following information pertaining to fisheries: fish pond society; fishermen's thrift, loan, housing, credit, and marketing societies; credit facilities for fishermen; and activities of the Fish Marketing Organization--including legislation, species of fish marketed, exports of local marine fish, mechanized fleet, fish collecting depots and posts, transport, supplies to fishermen, education, and finance.

IRRADIATION:

"Some Chemical and Organoleptic Changes in Gamma Irradiated Meats," by H. S. Groninger, A. E. Tappel, and F. W. Knapp, article, Food Research, vol. 21, no. 5, September-October 1956, pp. 555-564, printed. The Garrard Press, 119-123 W. Park Ave., Champaign, Ill. A study was made to define the major chemical and organoleptic changes in irradiated beef, pork, chicken, and fish. The meats and fish were finely ground, thoroughly mixed, packed in No. 2 enameled cans, evacuated, gassed with nitrogen or oxygen through a small hole, soldered shut, and frozen in a -0.4° F. room. Samples were thawed, irradiated, refrozen and held in the frozen state until analyzed. Assays were made for drip, moisture, peroxide values, carbonyl compounds, hematin pigment concentration, tocopherols, riboflavin, niacin, and thiamine. A multiple-comparison method was used to evaluate samples organoleptically.

ISRAEL:

Bamidgeh--Bulletin of Fish Culture in Israel, vol. 9, no. 2, 23 pp., illus., printed in English and Hebrew. Joint Agricultural Extension Center, Division of Fisheries, Ministry of Agriculture, Tel Aviv, Israel, July 1957. Contains the annual report for 1956 of the Fish Culture Research Station at Dor, Israel, together with other articles of interest on the development of pond fishing in Israel.

Fishermen's Bulletin, no. 14, December 1957, 38 pp., illus., printed in Hebrew with summaries in English. Ministry of Agriculture, Division of Fisheries, Sea Fisheries Research Station, P. O. Box 699, Haifa, Israel. Contains, among others, the following articles: "Around the Fisheries of Israel," by M. Shavit; "The International Fishing Gear Congress in Hamburg," by M. Ben-Yami; "An Experiment in the Freez-

ing of Cooked Fish," by H. Engelberg; and "An Experiment in Enlarging the Opening of the Trawl Net on the FMV 'Dror'," by D. Benyamin.

JAPAN:

Bulletin of the Faculty of Fisheries, Hokkaido University, vol. 8, no. 2, pp. 87-162, illus., printed in Japanese with summaries in English. Faculty of Fisheries, Hokkaido University, Hakodate, Japan, August 1957. Contains among others the following scientific papers: "Studies on the Beach Seines of Two-Boat Operation along the Pacific Coast of Aomori Prefecture. I--On the Construction of the Beach Seine of Two-Boat Operation Used for Both Mackerel and Sardine Fishing;" "The Formation of Magnesium-Ammonium-Phosphate Crystals in Canned Sea Foods. VI--Influence of the Contained Substances upon the Growth of the Formed $MgNH_4PO_4 \cdot 6H_2O$ Crystals in the Test Tubes. VII--The Formation of the Isolated Microscopical Crystal and its Incipient Growth. VIII--The Formation of the Crystals during the Processing of the Cans," "On Fish Troponin. I--Isolation and Amino Acid Composition," and "Studies in the Bacteriological Chemistry of Shark Muscle Spoilage. III--On the Effects of pH upon the Abilities of the Ureasplitting Bacteria Isolated from Spoiling Shark Muscle."

Bulletin of the Faculty of Fisheries, Hokkaido University, vol. 8, no. 3, pp. 163-241, illus., printed in Japanese with summaries in English. Faculty of Fisheries, Hokkaido University, Hakodate, Japan, November 1957. Contains among others the following scientific papers: "The Formation of Magnesium-Ammonium-Phosphate Crystals in Canned Sea Foods. IX--Method for Preventing the Formation of the Crystals during the Processing of the Cans. X--General Considerations," "Studies on Crystalline Whale Pepsin. III--Analysis of Amino Acid by Paper Chromatography;" "Studies on Crystalline Whale Pepsin. IV--Free amino Acids in Peptic Digests of Various Proteins;" "Studies on Crystalline Whale Pepsin. V--Relation Between Denaturation and Activity," and "Studies on Crystalline Whale Insulin. III--N- and C-Terminal Residues."

Data Record of Oceanographic Observations and Exploratory Fishing, No. 1, 247 pp., illus., printed in Japanese and English. The Faculty of Fisheries, Hokkaido University, Hakodate, Hokkaido, Japan, May 1957. Concerned with data collected in cruises to the Aleutians and Bering Sea.

Japanese Fisheries--Their Development and Present Status, 253 pp., illus., printed. Asia Kyokai, No. 1, 3-chome, Kyobashi, Chuo-ku, Tokyo, Japan, 1957. An extensive and generously-illustrated report on the progress of the Japanese fisheries since the end of World War II. Presents detailed accounts of the following topics: general aspects of the fisheries; fishing gear and methods; fishing boats; inland fisheries and culture; culture in shallow sea waters; pearl culture; refrigeration in the fisheries--describing the history and present status

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of the ice-making, cold storage, and frozen fish industries; outline and present situation of the canning of fisheries products; fish-paste industry; processed fisheries products; market and transportation; import and export trade; educational and research institutions; research of fisheries resources in Japan; fisheries finance--covering commercial, cooperative, and government financing; fishery cooperatives; public administration in fisheries; and fisheries statistics. An appendix containing 61 tables covers index of industrial activities and prices; national income from fisheries; management units; means of production; fisheries production--including fish catch, whaling, and processed and canned fishery products; distribution; consumption; prices; trade; financing; management; fishing boat insurance; and fisheries cooperative associations.

Memoirs of the Faculty of Fisheries, Kagoshima University (Memorial Number for the Tenth Anniversary), vol. 5, 225 pp., illus., printed in Japanese with summaries in English. The Faculty of Fisheries, Kagoshima University, Kagoshima, Japan, December 1956. Contains, among others, the following articles: "On the Chino-Japanese Fisheries Agreement. A New Principle of the International Regulation of High Seas Fisheries;" "An Interpretation of the Developmental Process of Fishery-Economy in Japan--Especially a Consideration on the Skipjack Fishery at Bonotsu;" "Studies on the Improvement of Yellow-tail Setting Net (III)--On the Tension Meter of Sand-bag Line and Effects Derived from the Measurement;" "Studies on the Improvement of Yellow-tail Setting Net (IV)--Model Experiment on Trap Net Furnished with Sea Bottom Bagnet;" "Studies on the Improvement of Yellow-tail Setting Net (V)--Model Experiment on the Two Different Kinds of Sea Bottom Fixed Nets;" "Studies on the Catch Efficiency Derived from the Difference in the Construction of Tuna Long-Line Gear (I)--On the Catch Difference from Each Depth of Hook in the Long-Line Gear;" "Studies on the Catch Efficiency Derived from the Difference in the Construction of Tuna Long-Line Gear (II)--On the Results of Fishing Test of Tuna Long-Line with 4 Hook Gear and 5 Hook Gear;" "On the Detective Effect of the Radar upon the Location of the Tunny-Long-Line (III);" "Theoretical Estimation of Albacore-Shoals Dimensions in Accordance with the Characteristic of Fishing-Rates;" "Studies on Some Marine Algae from Southern Japan, II;" "A Supplement of the Studies of the Salmon Eggs--Consideration of the Osmotic Pressure and the Destruction of the Eggs;" "On the Formation of Amine in Fish Muscle (I)--Formation of Histamine and Tyramine in Muscle and Shellfish During Spoilage;" "On the Formation of Amine in Fish Muscle (II)--Influence of Temperature on the Formation of Histamine in Fish Muscle;" "On the Variation of 'Tyrosine Value' in the Decrease of Fish-Muscle Freshness III.--Elucidation of Estimation-Value by Phenol Reagent Method;" and "On the Inspection of Radioactivity of Sea-Water in the Several Southern Sea Fronts and the Eastern China Sea."

LOBSTERS:

Canada's Lobster Fishery, by D. G. Wilder, 23 pp., illus., printed, 25 cents. Queen's Printer, Ottawa, Canada. A well-illustrated booklet on Canada's lobster fishery, describing the nature and value of the lobster resource and the need to conserve it. The author states that "To supply the demand, a very intensive fishery has been developed and lobsters are continually in danger of being overfished. Proper management to make best continuing use of this extremely valuable resource is of utmost importance to all concerned. Sound management procedures must be based on thorough knowledge of the lobster's life history and an understanding of the factors that control its reproduction, growth, and survival." The author, who is a leading authority of the subject, gives a brief history of the lobster fishery and a description of the appearance, anatomy, behavior and feeding, molting and growth, maturity and mating, egg laying and hatching, and enemies of the lobster. Methods of catching, distribution, and marketing, and management procedures are also discussed.

MARINE FISHERIES MANAGEMENT:

Some Considerations of Population Dynamics and Economics in Relation to the Management of the Commercial Marine Fisheries, by Milner B. Schaefer, 13 pp., illus., printed. (Reprinted from Journal of the Fisheries Research Board of Canada, vol. 14, no. 5, 1957, pp. 669-681.) Inter-American Tropical Tuna Commission, Scripps Institution of Oceanography, La Jolla, Calif. In order to arrive at a rational basis of considering the social problem of fisheries management, the author considers some significant aspects of the population dynamics of commercial fish stocks and of the economics of commercial fishing. He discusses the dynamics of renewable natural resources--the self-regulating and non-self-regulating resources. The economic model of the fishery is considered as well as some social and political considerations.

NETS:

"Net Materials of Synthetic Fibers," by Dr. A. Von Brandt, article, FAO Fisheries Bulletin, vol. X, no. 4, October-December 1957, pp. 182-210, illus., printed. Food and Agriculture Organization of the United Nations, Rome, Italy. (For sale by Columbia University Press, International Documents Service, 2960 Broadway, New York 27, N. Y.) Man-made, or truly synthetic, fibers are produced without the help of fiber-forming raw materials of vegetable or animal origin, such as cellulose or protein-base fibers. The truly synthetic fibers are manufactured from polymers, which are synthesized by laboratory processes from simple chemical units. These fibers belong to the plastic materials now so important. This paper gives a resume of the qualities of the man-made fibers known at the present time. Under the section on qualities of net materials, the following subjects are discussed; resistance to rotting, sunlight, heat, and chemicals; specific gravity of fiber; resistance to water, fouling, and attack by animals; breaking-strength; extensibility and

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elasticity of net twines; flexibility, visibility; and resistance to abrasion. Other sections cover an evaluation of the qualities of net materials, yarn numbering systems, yarn and twine, and truly synthetic fibers used for nets.

NEWFOUNDLAND:

"Newfoundland Fisheries, 1957," article, *Trade News*, vol. 10, no. 7, January 1958, pp. 8-9, illus., printed. Department of Fisheries of Canada, Ottawa, Canada. Describes very briefly trends and developments in the fisheries of Newfoundland, especially salted cod, frozen ground-fish, herring, mackerel, salmon, lobster, squid, turbot, fish meal, marine oils, seals, whales, and bait service. Also discusses fish inspection, conservation and development service, Fish Culture Development Branch, fishermen's indemnity plan, and development projects.

NEW MEXICO:

Guide to the Fishes of New Mexico, by William J. Koster, 152 pp., 104 illus., printed, \$1. New Mexico Department of Game and Fish, Santa Fe, New Mexico. Each species of fish known to occur in New Mexico waters is described. Representatives of 16 families are included, showing their shape, size, coloration, distribution, habits, uses, edibility, and relationship to other fish.

OCEANOGRAPHY:

Sea Temperature in the Gulf of Alaska and in the Northeast Pacific Ocean, 1941-1952, by Margaret K. Robinson, *Bulletin of the Scripps Institution of Oceanography*, vol. 7, no. 1, 98 pp. text, 1 chart, illus., printed, \$2. (Contributions from the Scripps Institution of Oceanography, No. 917.) Scripps Institution of Oceanography, University of California, La Jolla, Calif., August 30, 1957.

OYSTERS:

"Young Fishermen Learn from 4-H Oyster Project," by George Kyle, article, *Alabama Conservation*, vol. 29, no. 1, June-July 1957, pp. 8-9, illus., printed. Alabama Department of Conservation, 711 High St., Montgomery, Ala. Describes a 4-H Club project which shows its members how to plant "sea farms" and how to increase oyster production. The oyster project solved the problem of finding projects for 4-H youths in a non-farming area and offered the boys information they could use in later years.

PAKISTAN:

"Fish Industry in Pakistan," by Dr. M. R. Kureshi and Moinuddin Ahmad, article, *Economic Digest*, vol. 3, no. 6, February 9, 1958, pp. 1-4, printed. Institute of Development Economics, Block No. 56, Central Secretariat Buildings, Karachi, Pakistan. Presents a concise report on the status of Pakistan's fisheries--resources; production; fisheries development; fish harbor project and fresh fish stalls--in Karachi; exploration and research; mechanization of fishing craft; shrimp industry; fish meal and oil industry; East Pakistan marine fisheries; Mekran fisheries; fisheries cooperative societies; and exports of fish and fishery products.

PERU:

El Guano y la Pesca de Ancholeta (Guano and the

Anchoy Fishery), by Robert Cushman Murphy, 147 pp., illus., printed in Spanish. Compania Administradora del Guano, Lima, Peru, July 1954. A report on research into the possible effects of anchovy fishery upon the guano industry in Peru. Excessive fishery for anchovy, and other fish, could be disastrous to the guano-producing birds which depend on the anchovy for their existence. According to the author, since the anchovy and guano industries are both very important to the Peruvian economy, appropriate conservation measures will have to be taken in order to protect each one, and the fishery for anchovy and other species will have to be regulated.

PLANKTON:

A Portable Apparatus for Collecting Horizontal Plankton Samples, by Ruth E. Griffith, 3 pp., (Reprinted from *Ecology*, vol. 38, no. 3, July 1957, pp. 538-540) Department of Biology, Hood College, Frederick, Md.

RED SEA:

Fishes of the Red Sea and Southern Arabia, Volume I--Branchios-tomida to Polynemida, by Henry W. Fowler, 240 pp., illus., printed. The Weizmann Science Press of Israel, 33 King George Ave., Jerusalem, Israel, 1956.

SALMON:

Artificial and Natural Production of Silver Salmon, ONCORHYNCHUS KISUTCH, at Minter Creek, Washington, by Ernest O. Salo and William H. Bayliff, *Research Bulletin No. 4*, 82 pp., illus., printed. Department of Fisheries, Seattle, Wash., January 1958.

"The Importance of Size in the Change from Parr to Smolt in Atlantic Salmon," by P. F. Elson, article, *The Canadian Fish Culturist*, Issue Twenty-One, December 1957, pp. 1-8, illus., printed. Department of Fisheries, Ottawa, Canada.

"Number of Salmon Needed to Maintain Stocks," by P. F. Elson, article, *The Canadian Fish Culturist*, Issue Twenty-One, December 1957, pp. 19-23, illus., printed. Department of Fisheries, Ottawa, Canada.

"The Role of Hatcheries in Assuring Maritime Stocks of Atlantic Salmon," by P. F. Elson, article, *The Canadian Fish Culturist*, Issue Twenty-One, December 1957, pp. 25-32, illus., printed. Department of Fisheries, Ottawa, Canada.

"Using Hatchery-Reared Atlantic Salmon to Best Advantage," by P. F. Elson, article, *The Canadian Fish Culturist*, Issue Twenty-One, December 1957, pp. 7-17, illus., printed. Department of Fisheries, Ottawa, Canada.

SAMPLING:

"Sampling Problems and Methods in Fisheries Research," by John Gulland, article, *FAO Fisheries Bulletin*, vol. X, no. 4, October-December 1957, pp. 157-181, printed. Food and Agriculture Organization of the United Nations, Rome, Italy. (For sale by Columbia University Press, International Documents Service, 2960 Broadway, New York 27, N.Y.) A simple introduction to the principles of tackling sampling

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problems as they arise in fish population studies, particularly with regard to the catches of commercial vessels, and their size and age compositions. Some other problems likely to be met in fisheries biological studies are included, but the principles discussed are generally applicable. The author states that "The first step in a sampling system is to delimit the scope of the system. A biological investigation is often concerned with a self-contained population of organisms; this term 'population' is also used by statisticians in a similar sense to denote the collection of objects in which they are interested, and from which the sample is drawn. The two usages are often not distinct, but the statistical usage is wider, embracing any collection of objects or measurements, e.g., the cod in the North Sea form a population, but in the statistical sense so may the cod in a particular trawl haul and, if their lengths are of interest, then the set of the lengths forms a 'population.' Once the population to be sampled has been defined, the next step is to define the quantity, or quantities, in the population, for which estimates are to be made, such as the percentage of mature fish, or the average weight of a certain kind of food in the stomachs. Next, the precision with which the estimates are required must be decided. It is then possible to design a sampling system which will be good, or the best for that purpose." Chapters are included on (1) variance and bias; (2) random sampling; (3) subsampling and stratified sampling; (4) sampling for catch and effort; (5) indirect sampling; and (6) sampling the stock in the sea.

SEAWEED:

The Laverbread Industry in South Wales and the Laverweed, by M. A. Hampson, Fishery Investigations Series II, vol. XXI, no. 7, 8 pp., illus., printed, Her Majesty's Stationery Office, York House, Kingsway, London W.C. 2, England, 1957. Reports on a little-known industry in South Wales which manufactures "laverbread"--a seaweed delicacy made from the red seaweed, Porphyra.

STANDARDS:

United States Standards for Grades of Frozen Fried Fish Sticks (effective August 21, 1956), 6 pp., processed; United States Standards for Grades of Frozen Raw Breaded Shrimp (effective March 1, 1958), 6 pp., processed; United States Standards for Grades of Frozen Fish Blocks (effective April 1, 1958), 7 pp., processed. Agricultural Marketing Service, United States Department of Agriculture, Washington 25, D. C.

SURINAM:

Zeevisserij-Onderzoek--Coquette Survey Report, by Henry B. Lee III, 20 pp., processed. Department van Landbouw, Veeveelt en Visserij in Suriname, Paramaribo, Surinam, January 1958. The results of an exploratory fishing survey of the waters off Surinam out to a depth of 30 fathoms. The primary purpose of the survey was to locate fishable grounds containing commercial quantities of large shrimp and the secondary purpose to gain information of any other trawled species existing in the area.

SWEDEN:

Vastkustfisket dess Organisationer och Ekonomi (West Coast Fishing by the Economic Organization), by Ingemar Gerhard, 339 pp., illus., printed in Swedish. Svenska Vastkustfiskarnas Centralforbunds, Goteborg, Sweden, 1955.

TERRITORIAL WATERS:

The Exploitation and Conservation of the Resources of the Sea--A Study of Contemporary International Law, by F. V. Garcés Amador, 184 pp., processed, in English. International Law Commission of the United Nations in Cuba, Havana, Cuba, 1957. A historical, analytical, and critical report of the ideas and events that are effecting a transformation in the international law of the sea. According to the author, a new legal order must recognize and safeguard--by just and effective rules--the legitimate interests of all nations in the rational utilization of the resources of the sea. The book covers (1) the freedom of the seas and contemporary problems; (2) the regime of the sea and new extensions of state competence; (3) the submarine areas and the right to use their resources; (4) the conservation of the living resources of the high seas; and (5) the new international law of the sea. (Also see Commercial Fisheries Review, June 1957 p. 80.)

O Nacionalismo e a Pesca (On Nationalism and Fishery), by Nelson Hoffmann, 10 pp., printed in Portuguese. Marinha Mercante do Brazil, Rua Machado de Assis 39, AP. 703, Rio de Janeiro, Brazil, July 21, 1957. An essay presenting the author's views on Brazil's territorial water limits and reasons why he thinks that foreign vessels should not be allowed to fish in Brazilian waters.

New Trends in the Regime of the Seas--A Consideration of the Problems of Conservation and Distribution of Marine Resources (II), by Shigeru Oda, 26 pp., printed. (Reprinted from Zeitschrift fur Auslandsches Offentliches Recht und Volkerrecht, Sonderabdruck aus Band 18, Nr. 2, December 1957, pp. 261-286.) Max-Planck-Institut fur Auslandsches Offentliches Recht und Volkerrecht, Heidelberg, Germany. The author discusses the existing international regulations relating to the high seas fisheries. The U. S. policy, the obligation imposed on Japan, and the United Kingdom's view are discussed under the chapter on conservation policy of major maritime countries. The compulsory conservation measures proposed by the International Law Commission are analyzed, and another movement towards the dividing-up of the seas is discussed.

A Pesca na Comissao de Seguranca Nacional, da Camara dos Deputados (on Fishery, to the National Security Commission of the Chamber of Deputies), by Rui Simoes de Menezes, 7 pp., processed in Portuguese. Assessor de Pesca do Governo da Bahia, Caixa Postal 1366, Bahia, Brazil. Presents the text of a speech delivered by the author to the National Security Commission of the Chamber of Deputies of Brazil. The author presents his views on the territorial water limits off Brazil. Due to objections

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against the taking of tuna from waters off the coast of Brazil by foreign vessels, there have been proposals for extending the present 12-mile limit, but the author states that in his opinion, Brazil cannot legally have more than a 12-mile territorial water limit. He further states that the logical solution of the problem would be for Brazil to take measures to acquire tuna-fishing vessels and develop its tuna industry--thus capitalizing on the tuna available outside of the 12-mile limit. He also states that the port of Recife has taken a step in the right direction with the establishment in 1958, of a large tuna-processing factory which cans tuna, manufactures meal and oil, and makes fish sausage.

The Territorial Sea, 32 pp., printed. Reference Division, Central Office of Information, London, England, January 1958. This reference paper was prepared in anticipation of the International Conference on the Law of the Sea which opened in Geneva, Switzerland, on February 24, 1958. Deals mainly with the breadth of the territorial sea--one of the most topical and controversial subjects considered by the conference. Other related topics are discussed briefly.

TUNA:

"Les Madragues de Tunisie" (The Tuna Traps of Tunisia), article, *La Pêche Maritime, la Pêche Fluviale et la Pisciculture*, vol. 35, no. 942, Sept. 1956, pp. 385-387, printed in French. *La Pêche Maritime*, 190 Blvd. Haussman, Paris 8, France. The tuna traps called "madragues" have been used in Tunisia since olden times. According to the fishing statistics for Sidi-Daoud, the yield of bluefin tuna showed a constant decrease between 1800 and 1938. Since 1949, fishing has been considerably improved and the yield greatly increased. Until 1950, Sicilian tuna traps had been used without any important modification. The system had many inconveniences: it was complicated, had too short a leader, and unadapted fittings. The Atlantic system, now in use, offers many advantages: simplicity; efficiency of the inlet doors, disposed in such a way that any tuna which has come into the trap can be considered as caught; long leader enabling the trap to catch the fish off the coast; equipment easily assembled; catching chamber is made of thicker, stronger, and cheaper webbing; floats are of synthetic cork and more streamlined; and nets are weighted with chains.

The Tuna and the Tariff--The Dilemma of a Southern California Industry, by Ford Cleere, 9 pp., printed. (Reprinted from *California Sun*, Vol. 9, No. 11-A, February 1958, pp. 3-11.) Department of Journalism, University of California, Los Angeles, Calif. This report covers the problems of the California tuna industry--especially in relation to the possible raising of tariff barriers to foreign competition. The author states the problems in clear and concise terms without attempting to recommend solutions to them.

Utilization and Conservation of the Tuna Resources of the Eastern Tropical Pacific Ocean, by Milner B. Schaefer, 13 pp., illus., printed. (Reprinted from *Transactions of the Twenty-Second*

North American Wildlife Conference, March 4, 5, and 6, 1957, pp. 472-484) Wildlife Management Institute, Wire Bldg., Washington 5, D. C. According to the author, the fishery for the tropical tunas, depending on the yellowfin tuna and the skipjack, is the most valuable fishery in the Eastern Pacific Ocean. This article discusses the growth of the fishery which originated in Southern California shortly before World War I, when scarcity of albacore led the canners to turn to the tropical tunas to fill their growing requirements. The very rapid growth of the fishery gave rise to concern as to the possible effects of fishing on the resources of tunas and tuna-bait fishes. As a result, there was created in 1949 by a Convention between the United States and Costa Rica the Inter-American Tropical Tuna Commission, which is charged with the gathering and interpretation of scientific information to make possible maintaining the populations of tunas and tuna bait-fishes at levels which will permit maximum sustainable catches year after year. The Convention is open to adherence by all nations having an interest in the fishery. Panama adhered in the fall of 1953. The Commission employs an international staff of scientists to conduct the investigations, which are now in their seventh year. Some of the results of the investigations of the tunas are outlined briefly, such as distribution and population relationships, life history and ecology, and catch statistics and population dynamics. Future developments of the fishery are also discussed.

TUNISIA:

La Pêche du Poisson et des Crustacés en Tunisie (Tunisian Finfish and Crustacean Fisheries), by J. Gaudilliere, 7 pp., illus., printed. (Reprinted from *Debats et Documents Techniques*, no. 2, FAO, Rome, 1954, Conseil Général des Pêches pour la Méditerranée.) Food and Agriculture Organization of the United Nations, Rome, Italy.

TURKEY:

Balıkları Teknelerine Makina Secimi (Selection of Engines for Fishing Boats), by M. Nihat Ozerdem, Teknoloji Arastirmalari B., no. 1, 43 pp., illus., printed in Turkish. Balikcilik Arastirma Merkezi Raporlari, Istanbul, Turkey, 1957.

A Contribution to the Fishery Investigations in the Sea of Marmara, by Olav Aasen, Ilham Ar-tuz, and Erdogan Akyuz, Series Marine Research, vol. 1, no. 2, 31 pp., illus., printed in English, with Turkish summary. Balikcilik Arastirma Merkezi Raporlari, Istanbul, Turkey, 1956.

Fishery Investigations in Turkish Black Sea Waters with Special Reference to Anchovy (February-March 1956), by Olav Aasen and Erdogan Akyuz, Series Marine Research, vol. 1, no. 7, 39 pp., illus., printed in English with Turkish summary. Balikcilik Arastirma Merkezi Raporlari, Istanbul, Turkey, 1956.

Further Observations on the Hydrography and Occurrence of Fish in the Black Sea, by Olav Aasen and Erdogan Akyuz, Series Marine Research, vol. 1, no. 6, 33 pp., illus., printed in

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English with Turkish summary. Balıkcılık Arastırma Merkezi Raporları, Istanbul, Turkey, 1956. Describes the results of a fishery survey conducted in the Black Sea, October 17 through December 15, 1955.

Report on a Survey of the Turkish Black Sea Coast, by Olav Aasen, İham Artuz, and Erdoğan Akyuz, Series Marine Research, vol. 1, no. 5, 29 pp., illus., printed in English with Turkish summary. Balıkcılık Arastırma Merkezi Raporları, Istanbul, Turkey, 1956.

Some Data Concerning the Fisheries in Iskenderun Bay, by Olav Aasen and Erdoğan Akyuz, Series Marine Research, vol. 1, no. 4, 20 pp., illus., printed in English with Turkish summary. Balıkcılık Arastırma Merkezi Raporları, Istanbul, Turkey, 1956.

Türkiye Denizleri Balıkcılık Takvimi (Turkish Marine Fisheries Calendar), 36 pp., printed in Turkish. Hydrobiologic Research Institute, Istanbul University, Istanbul, Turkey, 1954.

VESSELS:

Naval Architecture of Small Craft, by D. Phillips-Birt, 367 pp., 168 text figures, 59 tables, printed, \$15. Philosophical Library, New York, N.Y., 1957. This is a well written and interesting treatment of a subject that can be obscure and dull. The historical approach is used to set forth the problems of design of small vessels of many types. The illustrations are numerous and good and these are tightly woven into the text by reference. The book contains much that is of interest to anyone concerned with construction and operation of small vessels. There is a chapter on fishing vessels. Chapters on the in-

stallation and transmission of power, propellers--fundamentals, propellers--cavitation and design, and powering calculations are excellent. The author appears to have succeeded in presentation of practical information with enough theory to make it interesting and thought-provoking.

WEST GERMANY:

Annual Report, 1956, West German Fisheries, printed. Ministry of Food, Agriculture and Forestry, Federal Republic of Germany, Bonn, Germany. This report discusses the utilization of the resources of the sea, and points out that competition is growing steadily. The fishing yield in the Federal Republic of Germany decreased slightly in 1956. During the year the German trawler fleet was modernized by nine new vessels, while sixteen older ones were eliminated. A number of trawlers were equipped with fish meal and fish oil plants; some with refrigerating equipment and deep freezing plants for processing the catches immediately on board. Nine new vessels were added to the lugger fleet and eight old luggers were eliminated. The cutter fleet (small deep sea fishery) increased in size somewhat, and the coastal fishing fleet remained unchanged.

WHALING:

Whaling--Amendments to the Schedule to the International Whaling Convention Signed at Washington on December 2, 1946, Treaties and Other International Acts Series 3944, 3 pp., printed, 5 cents. Department of State, Washington, D. C., 1957. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Presents the amendments adopted at the Ninth Meeting of the International Whaling Commission, London, June 24-28, 1957.



SPONGES

Sponges are animals low in the scale of evolution and not closely related to any others. They live fastened to some object on the sea floor and eat small living and dead particles carried in sea water. The sea water is drawn into fine canals which traverse the inner parts of the sponge. Particles of foods are picked up by special cells in small chambers into which the canals open, and are digested there. Eggs are produced in the tissues adjacent to the canals and are fertilized in these tissues. As they develop, they form larvae which are set free in the water and which have fine, vibratory hairs which keep them moving in the water. When they reach a suitable bottom surface, they attach themselves and eventually grow into adult sponges. There is no certain information on cross-breeding of sponges.

--"Sea Secrets," January 1958,
The International Oceanographic Foundation,
Miami, Fla.

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Pp. 7, 8, 9, 10, & 14--F. Bruce Sanford; pp. 22-23--A. D. Sokolich
p. 36--Branch of Exploratory Fishing and Gear Research, Seattle,
Wash.; p. 49--J. Pileggi.

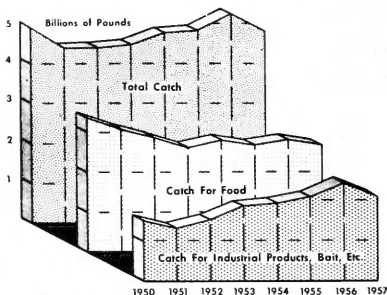
Fishery Leaflet 393, *Fisheries of the United States and Alaska, 1957* (A Preliminary Review), presents data on the value of the fishing industry and capital investments; foreign trade; supplies of certain fishery products; United States and Alaska catch by species; disposition of catch; catch by areas, and by months; value of the catch; quantity of gear used

FISHERIES OF THE UNITED STATES AND ALASKA, 1957

A PRELIMINARY REVIEW

By E. A. Power

CATCH OF FISH AND SHELLFISH, 1950 - 1957



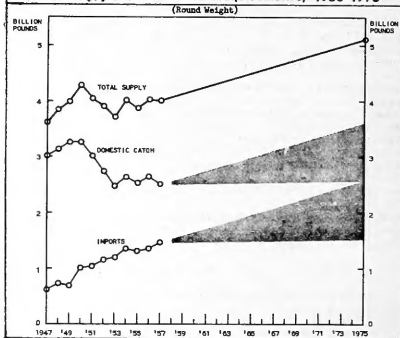
United States Department of the Interior, Fred A. Seaton, Secretary
Fish and Wildlife Service, Arnie J. Suomela, Commissioner
Bureau of Commercial Fisheries, Donald I. McKernan, Director

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United States Supply of Edible Fishery Products, 1947-1957, and Estimated Requirements, 1958-1975



and catch by gear; fur seals; military purchases; per capita consumption; wholesale price index; canned pack; the production of fish meal, oil, and solubles; fish sticks, and frozen fish.

The 1957 total catch of fishery products in the United States and Alaska amounted to approximately 4.75 billion pounds valued at \$351 million ex-vessel. Compared with the record catch (5.25 billion pounds valued at \$369 million) taken in 1956, the 1957 catch and value were down 10 percent and 5 percent, respectively. Increases in the landings of sea herring, whiting, jack and Pacific mackerel, and Maine lobsters, as well as species landed at New England ports for bait, reduction, and animal food did not compensate for the sharply reduced landings of

menhaden, tuna, and salmon, and decreases in the catch of shrimp, haddock, and Atlantic ocean perch.

There is considerable variation in the catch of fish throughout the year, with the greatest landings of most species occurring in the summer months. Nearly 50 percent of the annual landings in 1957 were made from June through August.

The per capita consumption of fish and shellfish in the United States amounted to 10.2 pounds (edible weight) in 1957--the same as in 1956. Consumption of fresh and frozen fish increased slightly in 1957 while that of canned products registered a slight decrease. Consumption of cured products during 1956 is estimated to have been 0.6 pounds per capita--the same as in the previous year.

Packs of canned salmon, Pacific sardines, anchovies, and shrimp were down sharply in 1957 as compared with the previous year. Production of canned tuna and fish for pet food and bait, however, reached new highs of 11,891,000 and 7,130,000 standard cases, respectively. There were increases in the production of canned Maine sardines, Pacific and jack mackerel, crabmeat, and whole and minced clams. The pack of canned fishery products totaled nearly 987 million pounds, valued at \$335 million to the packers--an increase of 1 percent in volume as compared with the previous year, but a decline of 4 percent in value.

A total of 262,463 tons of fish meal was produced in the United States and Territories during 1957--nearly 33,000 tons less than in 1956 when the largest production of fish meal occurred. For the first year since 1951 the domestic production of fish meal failed to exceed that of the previous year due mainly to a 20-percent drop in the catch of menhaden. However, menhaden was still the major fishery contributing to the reduction industry and accounted for 66 percent of the fish meal production. The yield of tuna and mackerel and Pacific sardine meal in 1957 also was less than manufactured in 1956.

There were 20.1 million gallons of fish and fish-liver produced in the United States and Alaska in 1957--a decrease of 25 percent compared with 1956 and only half the record production of 39.9 million gallons manufactured in 1936.

The yield of homogenized-condensed fish (56.8 million pounds) and fish solubles (187.8 million pounds) were both 5 percent less than in 1956.

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